

MARCUS E. JONES IN MEXICO, 1892

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ABSTRACT. Marcus E. Jones was a recognized expert on the Flora of the western part of the United States, and a self-taught geologist, when in 1892 he was commissioned to travel on the Pacific side of Mexico, to look into potential sites for the exploitation of minerals and the possibility of building new railroads to those sites. In his spare time, from mid-April until mid-July, he collected herbarium specimens to a total of about 750 gatherings in several duplicate sets. His collection as a whole is important because he was the first botanist to gather significant samples from a series of localities in south-central Jalisco and adjacent Colima. The primary set of specimens, those from Jones's private herbarium, now housed at Rancho Santa Ana (RSA-POM), have been somewhat neglected by contemporary specialists.

INTRODUCTION

Marcus Eugene Jones (1852–1934) was a brilliant, opinionated, controversial, careless, and difficult man who, in the words of his biographer Lee W. Lenz (1986), “above all else [he] was a superb field botanist who traveled over more of the West and for a longer period of time than any other botanist of his day, bridging the eras of travel with a team and wagon and that of the model-T Ford.” The following summation is also from Lenz (1986, p. 199):

“To understand Marcus Jones it is necessary to recognize certain facts: he abhorred pretension, deception and pomposity, and was strictly truthful as he understood the matter. To him everything was right or wrong, black or white, true or false, there was no place in his life for shades of gray and he had little use for the views of others with whom he disagreed. He was also prone to exaggeration and was given to making sweeping and sometimes unguarded statements, often expressing himself in an unnecessarily crude or caustic manner.”

EARLY INTEREST IN BOTANY

Jones was interested in plants from the time of his childhood in Iowa. He attended Iowa College (later Grinnell College), where he became proficient in Latin and probably (Lenz 1986, pp. 16, 17) took the classical course of study, which included English, Latin, Greek, Sanskrit, and Anglo-Saxon, as well as geography, mathematics, and “natural philosophy.” He graduated in 1875 and continued his studies, concentrating on Latin, until 1878, when he was awarded the degree of Master of Arts.

While he was in college, Jones began in earnest to collect the local plants in quantity and support himself at least in part by selling sets of duplicate herbarium specimens. By 1878 he was offering sets of 500 species of Iowa plants, which he sold for twenty dollars per set. In the summer of 1878 he moved his base of operations to Colorado, and at about the same time he established an arrangement with an Austrian, Karl Keck, who wanted sets of Western plants to sell in Europe. Jones returned to Grinnell in October, reportedly (Lenz 1986, p. 24) with 40,000 specimens, and spent the winter identifying his specimens and making up sets to send to Keck.

For the next few years Jones continued his plant-collecting (along with other activities) in the western States, particularly in Utah, Nevada, California, and Arizona, and also in Baja California. Beyond botany, as early as 1884 his writings began to reflect a concern about the economic development of Utah Territory and the geologic implications of this (Lenz 1986, p. 70). His geological expertise evidently continued to increase, as by 1888 he was being consulted about the validity of mining claims in Utah. He was consulted by the Territorial governors of Utah and Arizona on matters relating to the water supply and the reclamation of arid lands, and increasingly he became known as a reputable geologist.

His botanical work was treated with some respect by his contemporaries, particularly for the enormous energy he showed as a field-collector. Although some botanists were patient with his requests for identifications of his "new" discoveries in the relatively unexplored "West," he became increasingly frustrated by what he took to be a condescending attitude on the part of the "Eastern establishment." He felt that the "Eastern" botanists, especially those at New York and at Harvard, looked down on his work on "Western" plants, although they had had little or no field-experience with them and did not understand the geographical implications as he did. Perhaps unduly influenced by his prejudices, and always highly confident of his own abilities, he turned more and more toward identifying his own plant-specimens before making them up into sets of duplicates for sale or exchange.

After about 1890, and several papers in the Brandegees' short-lived journal *Zoe*, and elsewhere, Jones began to edit and publish his "Contributions to Western Botany" (the later ones printed on his own press), which made altogether a sizeable volume, 18 papers devoted first and foremost to the publication of the names and descriptions of new species. According to Lenz (1986, p. 237) Jones published the "relatively modest number" of about 793 taxa between 1881 and 1933. "Relatively modest" was in comparison with some of Jones's contemporaries, e.g., Thomas Howell (who was credited with 3290 new taxa), E. L. Greene ("some 3000 new taxa"), Wm. Suksdorf (1690), and Aven Nelson (849).

During the first part of his career, Jones concentrated geographically on the Great Basin of the western United States. When still relatively young he became well known as an expert on the floras of the western states, partly through the distribution of multiple sets of his specimens. At the same time he gradually became known as a field geologist. Late in his life he developed an interest in the vascular flora of Mexico, and undertook special collecting trips to the western part of the mainland in 1926, 1927, 1928 and 1930. His published papers, especially the later ones like his 18th *Contribution to Western Botany* (1933) show that he studied the collections in depth and identified most of them to his own satisfaction, but not always to the satisfaction of others.

COLLECTING IN MEXICO, 1892

In 1890 (Lenz 1986, pp. 77, 91) Jones was approached by Gen. W. J. Palmer, who after the American Civil War had returned to private life and become "one of the most enterprising of the early Western railroad men," who also organized and developed a number of mining towns along the railroads. Among his accomplishments was the successful completion of the Mexican National Railway from Laredo to Mexico City. Jones did some work for him in 1890 and 1891. On April 7, 1892, Jones [while in Salt Lake City] received from Gen. Palmer a telegram asking him to go immediately to Mexico "to make an examination of Sierra Mojada, Zacatecas, Guanahuato [sic],

and the properties along the Mexican Nat[ional] R. R. from Irapuato to Manzanillo.” Another version, in Jones’s own words (Lenz 1986, p. 91) says that on this trip he was to study the mines and ore production of the leading mining camps in [western] Mexico and report on them for three proposed railroad routes. His first destination was the established mining district at Sierra Mojada in far-western Coahuila.

According to Lenz (1986, p. 93) Jones wrote of the 1892 collections, “[J. N.] Rose named most of them. I put up three sets, one at the U.S. National [Herbarium], one my own, and I presume the third [to be at the] Missouri Botanical Garden.” [There is also a substantial set at MSC, the herbarium of Michigan State University, East Lansing.] His private herbarium, including the undistributed part of his own set of the 1892 plants, was acquired by Pomona College in 1923. A survey conducted during the latter part of the year 2003 shows that perhaps four-fifths of the numbered gatherings are still represented at POM-RSA, but a very large number of these have never been more than casually identified, and many have been grossly misidentified by Jones or someone else. If Rose actually named a large percentage of the specimens, Jones must have felt it was superfluous to go back at the time and make his own decisions on their identities.

Because of his obligation in 1892 to his (geological) sponsor, the hours when he could “botanize” were limited. In spite of that he managed to amass a botanical collection of some 750 gatherings, the majority of them with several duplicates. He collected specimens from about 30 localities. The counts listed below are presumably smaller than the actual totals, as no more than four-fifths of Jones’s numbers have been located at POM or elsewhere. The importance of his botanical collections derives from his established practice of trying to “collect the whole flora” at each locality (as he said of himself), and secondly because he was the first (and often the last) collector to visit the localities in question. On the upper slopes of the Nevado de Colima, for example, where he preceded by one year the great collector of Mexican plants, C. G. Pringle, Jones made at least 85 gatherings in two days, including many alpine and subalpine species.

The numbered collections of 1892 include *at least* 85 from the massif of the Nevado de Colima (Jal.), 75 from the Sierra Mojada (Coah.), 65 from La Palma (Jal.), 50 from Chiquilistlán (Jal.), 45 from Santa Cruz (Jal., near Tapalpa), 40 from Colima (Col.), 30 from Ojo Caliente (Zac.), and at least 25 from each of the following: Pihuamo (Jal.), “Sacoalco” (Jal.), Tapalpa (Jal.), Ferrería de Tula (Jal.), Manzanillo (Col.), and what Jones called the Rio Cuvianes (Jal., Col.). At the end of the trip Jones numbered the collections, sent some of them to specialists for determination, named the others as best he could and sent out several sets of the duplicates to his customers.

Authors of recent monographic studies of Mexican genera or families of plants have mostly overlooked the Pomona herbarium, which remains a valuable source of information about the vascular flora of south-central Jalisco and adjacent Colima as it was a little more than a century ago.

As far as I can determine, Jones paid little attention to his 1892 collections after his first distribution of some of the sets. At that time he had no particular interest in the flora of Mexico, except that he had done some plant-collecting in the arid northwest. In the years 1892–1893 his interest was still primarily in the Great Basin and adjoining areas. It seems that he was also too busy with other matters to go back to the details of his Mexican collection. Furthermore, in 1892 his primary responsibility was to search for potential sites where ores might be exploited profitably and for potential railroad routes to these sites. As McVaugh (1972, p. 352) noted, “In the typewritten itinerary prepared by Jones...and now at Pomona College, he said [p. 21]:

botany was a side issue and I had to get specimens as my other business would allow. For this reason I got only about 5 specimens of a kind, and never could work up a flora as was my wont." [See above for a slightly different version of this story].

Jones kept a diary during most of his field excursions, and later dictated a chronological account of his travels and exploration, which was published [Leaflet. West. Bot. 10 (no. 12): 193–236. 29 Nov 1965] under the title of *Botanical Exploration of Marcus E. Jones, 1876 to 1919: an Autobiographical Account*. This was apparently a version of what Lenz (1986, p. 11) cited frequently in abbreviated form (as BM), and called "the best of the autobiographical accounts but flawed by errors of fact and transcription and [which] must be used with caution."

By 1893 Jones had begun to be absorbed in his long-time study of *Astragalus*, and much of his attention must have been devoted to the preparation of his papers for *Zoe* that were published in that year. In 1894 he spent the field season (March to October) in Utah, where he was employed as a "Special Field Agent" of the U.S. Department of Agriculture (Lenz 1986, pp. 253–290). By that time his two-year-old Mexican collections must have been low on his list of priorities, where they subsequently remained, with few exceptions.

NUMBERING OF THE 1892 COLLECTIONS

Jones made a practice throughout his career of collecting several or many duplicate examples of each gathering and arranging these in sets for sale. Many of his collections from the earlier years were not serially numbered, or at least the numbers were not mentioned in publication (see Lenz, 1986, pp. 403–465, "New Taxa Described by Jones"), but beginning with the Mexican trip of 1892 he eventually gave numbers to most of the gatherings, though he seems to have attached little importance to this.

The numbering of the collections of 1892 is of some general interest. Now, at the beginning of the 21st Century, scientifically-inclined collectors generally number their gatherings serially and chronologically, beginning with No. 1 and continuing a life-time series as a unique record. Such a series constitutes a valuable historical source for subsequent investigators who may need to know the exact whereabouts of the collector in time or space, or both. In 1892 the numbering of collections was already a long-established practice, but individual collectors often began their numbering anew with each field-season, and editors (who often were the same botanists that had named the plants) felt free to disregard these "field numbers" and assign new numbers based on some preferred "Natural System" of classification. A victim of this latter method was the great collector Charles Wright, whose work with the Mexican Boundary Survey was described by Asa Gray in two good-sized volumes (Gray 1852, 1853), but whose precise dates and collecting localities were mostly unknown until they were elucidated by Elizabeth Shaw (1987) on the basis of Wright's field-numbers as he had recorded them elsewhere.

For more than 30 years (ever since I began to notice Mexican specimens collected in 1892 by Marcus E. Jones and housed at US, MO, MSC or GH, or when I noticed citations of such specimens in the literature of systematic botany), I have been "keeping book" on this collection as a part of the record of botanical exploration in Nueva Galicia. I published a general paper on the latter (McVaugh 1972), in which three pages of text were devoted to Jones's trip of 1892, and included a transcript of his diary from 22 May through 18 July. At that time my record of the collections

made by Jones was very incomplete—only about one quarter of the numbered collections had surfaced and most of the numbers were between 1 and 500, although in memoranda Jones recorded that his collection included numbers as high as 752, and I had seen no. 769. About half of the available information was in a list of collections accessioned at the U.S. National Herbarium (US), which came to me through the kindness of George Russell.

In August 2003 I enlisted the help of Curator Steve Boyd at RSA-POM. He very kindly suggested the name of a member of the herbarium staff, Lisa M. Rojas, who spent many hours during the rest of that year and into the next, searching for the original set of specimens from Jones's herbarium, recording the data on each one, and making digital images of the specimens for my study. Thanks chiefly to Ms. Rojas, and also to Michael Denslow and Gary Wallace, we now have a record of about four-fifths of the numbers, including many of the higher ones (above 500).

Before the receipt of the data gathered by Ms. Rojas and collaborators, I had no reliable way to guess how the numbers were assigned to the Jones collections of 1892. The first hundred numbers, seemingly chosen at random, include several dated as of 19 April, when Jones began to collect in Coahuila, several from 13 July when he was on his way home to Utah, and many from intervening dates and unrelated localities in May and June. This seems effectively to rule out a strictly chronological arrangement, and gives no clue to any other arrangement.

One principal scenario suggests itself. While Jones was in the field, traveling on foot or by wagon, or on muleback, botanizing when he could find the time, camping in open mountainous country, trying to collect in several sets, make sure the specimens were dried expeditiously (even during rainy periods) and preserved thereafter, he had neither the time nor the facilities to consider making labels as he went along, or even to arrange the specimens in any way. It seems likely that the most he could do was to bundle up his specimens from each locality as soon as they dried, and write the locality and date on each bundle.

When Jones returned to the United States (perhaps to the National Herbarium in Washington, D.C., where J. N. Rose "named most of them"), there must have been a grand opening of 25 to 50 or more bundles, and a beginning of random numbering, perhaps after the selection of a sample of species and genera already known to Rose (or to Jones), or for submission to a specialist.

The numbers from one to eleven (no. 3 is missing and no. 2 is applied to two different species) include, in order, members of the families Clethraceae, Myrsinaceae, Leguminosae, Valerianaceae, Polygonaceae, Dioscoreaceae, Piperaceae, Melastomataceae, Capparidaceae, Loranthaceae, and Malpighiaceae. This seems to rule out the better-known Natural Systems of classification as bases for numbering Jones's collections.

On the other hand, the numbers from 128 to 138, from seven different localities and collected on seven different days, are all members of the Rosaceae except no. 132 (a species of *Casearia* in the Flacourtiaceae) and no. 133 (*Ximenia parviflora* in the Olacaceae), either of which might have been taken by Jones as "rosaceous." Further, the specimens from No. 141 to 216 are all members of the Leguminosae, except for about six scattered through the long series. Soon it must have become evident to Jones that in families like the Leguminosae there were so many specimens that it would be most efficient to sort the entire collection by plant-family and proceed with the identifications, species by species, without having to repeat the labor of keying out the same species more than once.

Once the entire collection had been sorted to the family level, it would have been comparatively simple to arrange the bundles and assign numbers more or less

in accord with a system like that used by J. M. Coulter in his contemporary "Botany of western Texas" (Contr. U.S. Natl. Herb. 2: [i-iv], v, 1-588. 1891-1894). A scan of the list of Jones's collections shows that the numbers follow Coulter's system rather closely (although with many unusual intercalations) until the end of the Pteridophytes at No. 542.

Notable are the Cactaceae, which were numbered 239 to 258; the Euphorbiaceae (nos. 411-435 including some misidentifications), the showy-flowered Monocots (nos. 447-473), and ferns or fern-allies (nos. 497 to 542, except for a few scattered numbers; the dates of collection ranging from 19 April to 13 July).

I suspect that this concluded the numbering of the collections of 1892 that were to be distributed in sets. It is not clear why Jones discontinued the sorting (if that is really what he did), with some 200 numbers still unlabelled and mostly unstudied.

Labels for numbers below No. 550 are commonly typed or (except for the name of the plant) handwritten by Jones himself. Above no. 550 I have noted no more than two (Nos. 592, "Lake near San Miguel, 6 May" and 643, "Rio Cuvianus Tuxpan") that are in the hand of Jones. There may be others, of course, among the specimens that have not been recovered.

Among the higher numbers various unrelated specimens from a single locality are mostly grouped in short or long series, e.g., nos. 550-567 are apparently all from Ojo Caliente, Zac., where Jones collected on the 9th of May, and nos. 601-638 are apparently all from the Sierra Mojada, Coahuila, 19-21 April. The labels on these are mostly in the hand of P. A. Munz, evidently copied from original notes by Jones, and the locality is variously written (as Jones may well have labelled his bundles) as "Sierra Mojada Mts.," "Sierra Mojada, Mex.," "Mojada, Mex." or merely "Mojada." Nos. 685-700 (as far as these have been recovered) are dated either 13 or 14 July, with locality written as "Volcano of Colima," "Nevado de Colima," or "Volcan, Mex.," and the data again are in the hand of Dr. Munz. Similarly, nos. 735-753 (as far as known) are dated 7, 8, or 9 June, all in the hand of Munz, all from La Palma, Jalisco. The supposition is that when the Jones herbarium came to Pomona College, Dr. Munz took upon himself the work of finishing the labelling that Jones had left unfinished at his untimely death.

MEXICAN COLLECTIONS, 1926-1930

Jones was 74 years of age when in 1926 he began a series of four major collecting trips that resulted in many hundreds of Mexican specimens and a large number of new taxa based on his own collections. His itineraries in 1926, 1927, 1928, and 1930 were summarized in tabular form by Morton (1945, pp. 89-91, q. v. below). McVaugh (1972, pp. 252-253) published a brief narrative summary of Jones's work in Nayarit and Jalisco in 1927 and 1930. His work in Mexico in 1892 has mostly gone unnoticed, except for the publication of excerpts from his diary from May 22 to July 18, the period of his stay in Nueva Galicia (McVaugh 1972, pp. 250-252).

The great majority of the miscellaneous new names published by Jones for Mexican plants first appeared in his *Contribution* no. 18 (1933), and earlier in smaller numbers in *Contributions* no. 12 (1908), and no. 15 (1929). His work on the Mexican flora was examined in detail in a pair of substantial papers published in 1945 by two well-regarded authors (Morton, C. V. Mexican phanerogams described by M. E. Jones, Contr. U.S. Natl. Herb. 29: 87-116; Blake, S. F. Asteraceae described from Mexico and the southwestern United States by M. E. Jones, 1908-1935, Contr. U.S. Natl. Herb. 29: 117-137). Both Morton and Blake were primarily concerned with the Jonesian type-specimens, and

the identities of new names proposed by Jones and based on his own material. Both authors dealt in detail with Jones's Mexican collections from 1926 to 1930. Neither Blake nor Morton, unfortunately, nor Jones himself, studied in detail the first large collection that Jones made on the mainland of western Mexico in 1892. Relatively few types have been found among the 1892 collections.

The papers by Blake and Morton include many critical notes, and Blake's contribution is noteworthy for its long discussions on geographical and nomenclatural points. Both authors felt free to point out the shortcomings of Jones's work. Blake (op. cit. 121) was inclined to blame "Jones' inability to identify his own material from a region with which he was not familiar, [so that] every one of the 25 allegedly new species of Asteraceae he described from his 1930 collection in Jalisco is a synonym of an older species, as is also the single species from his 1892 collection, and...12 of the 26 were described by him under wrong genera, in two cases in wrong tribes, in 6 others in wrong subtribes."

Morton's comments (1945, p. 87), severe to the point of harshness, are relevant here: "Jones' herbarium and library facilities were not wholly adequate for work on the Mexican flora, and his previous experience had scarcely qualified him for critical research on tropical or subtropical plants. It seems likely, moreover, that his eyesight was not very good at the time, for there is little evidence in his descriptions that careful dissections were made for any of his new species. Consequently, it is no surprise to find that his work on the Mexican flora is poor..." [Editorial comment by McVaugh, 2004: It may well have been true that Jones had some diminished vision as he neared 80 years of age, from 1926 to 1930, but no such a deficiency is evident in his earlier papers. His name *Calamovilfa poaeformis*, for example (Contr. West. Bot. 14: 9. 1912, based on *Jones 478a* (POM 115352), was ostensibly a new combination based on *Cinnastrum poaeformis* Fourn. (Pl. Mex. 2: 90, ex descr. 1886), but Jones made clear that although he had taken up the epithet from Fournier's, "description...my species shall rest on my characters given below"; to this he added a very detailed 16-line description].

As I read this, looking back from almost 60 years after Morton and Blake (1945) enumerated the very large numbers of errors made by Jones, and having the insight on Jones's character that was provided by Lenz, it is not unreasonable to suppose that when Jones went over his own collections in some haste, and found something unfamiliar to him, he decided it must be new. Exactly the same story has gone the rounds with reference to E. D. Merrill and P. C. Standley, with the difference that each of them was already a recognized world-expert on the flora he was studying.

TENTATIVE LIST OF NEW NAMES BASED ON MEXICAN COLLECTIONS RELEVANT TO THOSE MADE BY MARCUS E. JONES IN 1892

Apium depressum M. E. Jones, Extr. from Contr. West. Bot. 18: 63. 1933. Lake near San Miguel, Zac., 6 May, *M. E. Jones s.n.* (POM 82793, holotype). = *Apium leptophyllum* (Pers.) F. Mueller ex Benth. & F. Muell., fide Mathias & Constance, N. Amer. Flora 28B: 129. 1944.

Arracacia tapalpa M. E. Jones, Extr. from Contr. West. Bot. 18: 62. 1933. Ferrería de Tula, Tapalpa Mts., Jal., 28 May, *M. E. Jones s. n.* (POM 82990, holotype). = *Tauschia nudicaulis* Schltdl., fide Mathias & Constance, N. Amer. Flora 28B: 83. 1944.

- Asclepias senecionifolia** M. E. Jones, Contr. West. Bot. 12: 49. 1908. Santa Cruz, near Tapalpa, Jal., 14 June, *M. E. Jones s. n.* = *Asclepias rosea* H. B. K., fide Woodson, Ann. Missouri Bot. Gard. 41: 150. 1954.
- Asclepias constricta** ["contstricta"] M. E. Jones, Contr. West. Bot. 12: 49. 1908. Volcano of Colima, Jal., 13 July, and at Tapalpa, Jal., June 10, *M. E. Jones 318* (type, MO, fide Woodson, 1954). = *Asclepias pringlei* (Greenm.) Woodson, fide Woodson, Ann. Missouri Bot. Gard. 41: 111. 1954.
- Asclepias exilis** M. E. Jones, Contr. West. Bot. 12: 48. 1908. Pastorilla, Zac., 2 May, *M. E. Jones s. n.* [no. 568], (type, MO, fide Woodson, 1954; POM 76066). = *Asclepias scaposa* Vail, fide Woodson, Ann. Missouri Bot. Gard. 41: 94. 1954.
- Asclepias jaliscana** M. E. Jones, Contr. West. Bot. 12: 49. 1908 (non *Asclepias jaliscana* B. L. Rob. 1894). Chiquilistlán, Jal., 28 May, *Jones s. n.* (type, MO, fide Woodson, 1954; POM). = *Asclepias angustifolia* Schweigger, fide Woodson, Ann. Missouri Bot. Gard. 41: 62. 1954.
- Asclepias tapalpana** M. E. Jones, Contr. West. Bot. 14: 35. 1912. *Asclepias jaliscana* Jones (1908), non *Asclepias jaliscana* B. L. Rob (1894)
- Astragalus diphacus** var. **peonis** M. E. Jones, Contr. West. Bot. 10: 65. 1902. Zacatecas, 16 May, *M. E. Jones s. n.* (POM, holotype). = *Astragalus diphacus* S. Watson [probably], fide Barneby, Mem. N. Y. Bot. Gard. 13: 1124. 1964.
- Astragalus racemosus** var. **brevisetus** M. E. Jones, Proc. Calif. Acad. Sci. II. 5: 662. 1895. Ramos, Zac., [=S. L. P.] 5 May, *M. E. Jones s. n.* (POM, holotype). = *Astragalus racemosus* var. *racemosus*, fide Barneby, Mem. N. Y. Bot. Gard. 13: 416. 1964.
- Bursera jonesii** Rose, Contr. U.S. Natl. Herb. 3: 314. 1895. Near the city of Colima, Col., 2 July, *M. E. Jones 73* (US, holotype). = *Bursera schlechtendalii* Engler, fide McVaugh & Rzedowski, Kew Bull. 18: 361. 1965.
- Calamovilfa poaeformis** M. E. Jones, Contr. West. Bot. 14: 9. 1912. Volcano of Colima, Jal., among pines on the slopes, 13 July, *M. E. Jones 478a* (POM 115352, holotype).—The name was ostensibly based on *Cinnastrum poaeformis* Fourn., Pl. Mex. 2: 90, ex descr. 1886, but Jones stated, "... from the description, but my species shall rest on my characters given below," i.e., a very detailed 16-line description. This creates an unusual nomenclatural situation in which an author describes and typifies a new species but gives it a name that he thinks may or may not apply to it.
- Cercocarpus mojadensis** C. K. Schneid., Ill. Handb. Laubholzk. 1: 530. 1905. Sierra Mojada, Coah., 19 April, *M. E. Jones 134* (MO, holotype).—According to James Henrickson (in litt. 2003), this collection appears to be a desert derivative from *Cercocarpus fothergilloides* H. B. K. with many specimens showing intermediate vestiture.
- Cleome chapalaensis** Iltis, Bol. Inst. Bot. Univ. Guadalajara Epoca III. 5: 428. 1998. N of Zamora, Mich., road to La Barca, 29 July 1960, *H. H. Iltis et al. 490* (WIS, holotype).—According to Iltis (1998, p. 421, the first specimen of this species

ever collected (but unfortunately unrecognized *in herbario* for a century), was from "Sacoalco" [Zacoalco de Torres, Jal.], collected 16 July 1892 by M. E. Jones (no. 576, POM 93793).

Dioscorea mitis Morton, Publ. Carnegie Inst. Washington 461: 247. 1936. Pihuamo, "Mich." [=Jal.] 16 June, *M. E. Jones* 6 (US 337885, holotype).—This is a little-known but apparently distinct species, recognizable either from staminate or pistillate material (fide McVaugh, *Flora Novo-Gal.* 15: 374. 1989, a decision in which the late Bernice Schubert concurred).

Ficus jonesii Standl., Contr. U.S. Natl. Herb. 20: 31. 1917. La Palma, Jal., 7 June, *M. E. Jones* 33 (US 237888, holotype). = *Ficus glydicarpa* (Miquel) Miquel, fide Quintana & Carvajal, Bol. Soc. Inst. Bot. Univ. Guadalajara 8: 16. 2001 (without citation of type).

Fraxinus nummularis M. E. Jones, Contr. West. Bot. 12: 59. 1908. Sierra Mojada, Coah., 19 April, *M. E. Jones* s. n.; Lenz (1986, p. 439) says "Type POM."—Standley (Contr. U.S. Natl. Herb. 23, part 4: 1135. 1924) accepted this as a valid species, but said "It seems probable that this is a form of *F. greggi* having [in the type specimen at US] all the leaves simple and oval."

Hymenocallis jaliscensis M. E. Jones, Extr. from Contr. West. Bot. 18: 33. 1933. Saltillo, Jal., 1 June, *M. E. Jones* 458 (POM 119358, lectotype chosen by Traub & Vickery, *Plant Life* 12: 43–44. 1956).—With advice from the monographer of the genus, James A. Bauml, McVaugh accepted this as a valid species with restricted range in Nayarit and Jalisco (*Flora Novo-Gal.* 15: 214. 1989).

Ionoxalis macrocarpa Small, N. Amer. Flora 25: 41. 1907. La Palma, Jal., 9 June, *M. E. Jones* 117 (US, holotype). = *Oxalis macrocarpa* (Small) Knuth, fide Denton, Publ. Mus. Michigan State Univ. Biol. Ser. 4: 575. 1973.

Ionoxalis tenuiloba Rose, Contr. U.S. Natl. Herb. 10: 115. 1906. Colima, Col., 2 July, *M. E. Jones* 118 (US, holotype).—Rose commented in the protologue (p. 115), "This species has very remarkable leaflets." The leaflets are, as he described them, "deeply 2-lobed," and the lobes "strongly divergent, linear, 2.5 to 5 cm long, acute." Denton (Publ. Mus. Michigan State Univ. Biol. Ser. 4: 566. 1973.), without comment, reduced *I. tenuiloba* to the synonymy of *Oxalis latifolia* H. B. K., though she said (p. 567) of the latter, "leaflets obcordate, lobed up to one-half their length."

Lupinus reflexus Rose, Contr. U.S. Natl. Herb. 8: 309. 1905. Nevado de Colima, Jal., 13 July, *M. E. Jones* 204 (US, holotype).—This is apparently a distinct high-montane species (cf. *Flora Novo-Gal.* 5: 591. 1987).

Malpighia cordata Small, N. Amer. Flora 25: 154. 1910. Sacoalco, Jal., 16 July, *M. E. Jones* 27 (US 236896, holotype).—W. R. Anderson (in litt. 2003) informs me that this is probably a form of the variable *Malpighia mexicana* Adr. Juss. but conceivably distinct.

Phaca zacatecana Rydb., N. Amer. Flora 24: 352. 1929 [non *Astragalus zacatecanus* (Rydb.) Barneby, 1964]. Casualidad, Zac., 26 Apr, *M. E. Jones* s. n. [no. 146] (NY, holotype). = *Astragalus wootonii* var. *candollianus* (H. B. K.) Barneby, fide Barneby, Mem. N. Y. Bot. Gard. 13: 870. 1964.

- Pityrogramma tartarea** var. **fallax** Domin, Věstn. Král. České Společn. Nauk, Tř Mat.-Příř. 1941(15): 8. 1942. San Marcos, [Jal.]. 21 June, *M. E. Jones 513a* (POM 121273, isotype, so annotated by C. V. Morton, 1969; the holotype was lost in WWII).
- Quercus crenatifolia** Trelease, Mem. Natl. Acad. Sci. 20: 57, *pl.* 52. 1924. Chiquilistlán, Jal., 28 May, *M. E. Jones 440* (MO, holotype). = *Quercus obtusata* Humb. & Bonpl., fide McVaugh, Flora Novo-Gal., Contr. Univ. Michigan Herb. 12, part 1, no. 3: 60. 1974; González Villarreal, Género *Quercus* en Jalisco, Inst. Bot. Univ. Guadalajara Coll. Flora de Jal. 1: 145. 1987.
- Quercus jonesii** Trelease, Mem. Natl. Acad. Sci. 20: 136, *pl.* 257. 1924. Chiquilistlán, Jal., 28 May, *M. E. Jones 446* (US, holotype). = *Quercus coccolobifolia* Trel., fide McVaugh, Flora Novo-Gal., Contr. Univ. Michigan Herb. 12, part 1, no. 3: 25. 1974; González Villarreal, Género *Quercus* en Jalisco, Inst. Bot. Univ. Guadalajara Coll. Flora de Jal. 1: 52. 1987.
- Quercus serrulata** Trelease, Mem. Natl. Acad. Sci. 20: 179, *pl.* 361. 1924. Chiquilistlán, Jal., 28 May, *M. E. Jones 445* (US, holotype). = *Quercus castanea* Née, fide McVaugh, Flora Novo-Gal., Contr. Univ. Michigan Herb. 12, part 1, no. 3: 21. 1974; González Villarreal, Género *Quercus* en Jalisco, Inst. Bot. Univ. Guadalajara Coll. Flora de Jal. 1: 40. 1987.
- Raimannia colimae** Rose, Contr. U.S. Natl. Herb. 8: 330, nom. illegit. 1905; Rose ex Sprague & Riley, Kew Bull. 1921: 200. 1921. (The generic name *Raimannia* was not validly published until 1913). Volcano [of] Colima. Jal., 14 July, *M. E. Jones 232* (US, holotype). [= *Oenothera pubescens* Willd. ex Spreng., Syst. Veg. 2: 229. 1825, or *Oe. laciniata* var. *pubescens* (Spreng.) Munz, fide Munz, Amer. J. Bot. 22: 656. 1935].—In many recent treatments the montane *Oe. pubescens*, which grows at elevations from 1500 to 3900 m in western North and South America, has been considered a subspecies of *Oe. laciniata*, which is known primarily at lower elevations in the eastern United States, though widely naturalized elsewhere. Crossing experiments have shown, however, that hybrids between *Oe. pubescens* and *Oe. laciniata* are sterile, and that chromosome pairing at meiosis is irregular. Dietrich & W. L. Wagner (Syst. Bot. Monogr. 88: 73–77. 1988) treat *Oe. pubescens* as a widespread and very variable species and include *Raimannia colimae* as a synonym.
- Salix jaliscana** M. E. Jones, Contr. West. Bot. 12 77. 1908. Ferrería [de Tula], Jal., 28 May, *M. E. Jones s. n.* [437] (POM 107135, type).—Standley (Contr. U.S. Natl. Herb. 23, part 1: 160. 1920) recognized this as a valid species, distinguished from *S. bonplandiana* H. B. K. by its dense tomentum, shorter petioles, and shorter staminate aments. E. Carranza González (Acta Bot. Mex. 32: 33–38. 1995), in a paper on the willows of the Bajío and adjacent areas, accepted *S. jaliscana* as distinct from *S. bonplandiana*. George Argus, a specialist in American willows, treated *S. jaliscana* as a synonym of *S. bonplandiana*, without comment (Syst. Bot. Monogr. 52: 52. 1997).
- Tradescantia orchidophylla** Rose & Hemsl., Hooker's Icon. Pl. 26: *pl.* 2522. 1897. In dark wet woods below Colima, Col., 5 July, *M. E. Jones 467* (US,

holotype).—This is apparently a distinct species limited to western Mexico, fide D. F. Hunt in *Flora Novo-Gal.* 13: 186, fig. 46. 1993.

Vernonia viarum M. E. Jones, Extr. from Contr. West. Bot. 18: 69. 1933. Chiquilistlán, Jal., 30 May, *M. E. Jones* 288. = *Vernonia deppeana* Less., fide Blake, Contr. U.S. Natl. Herb. 29: 124. 1945. Blake states that “This specimen [presumably the one at US] was correctly identified by Dr. B. L. Robinson, who is quoted by Jones, but Jones nevertheless proceeded to describe it as a new species.”

The accounts published by Blake (1945) and Morton (1945) imply an excess of irresponsible “discoveries” of many “new taxa” by Jones over a period of many years, and emphasize his sometimes gross misidentifications of plants from Mexico and elsewhere. The above list of novelties from the collection of 1892 does not suggest that Jones was a “splitter” basing his names on single or trivial characteristics, but that his decisions were sometimes made without adequate study of the literature and of existing herbarium material. In his earlier papers Jones described various new taxa from different parts of Mexico. These do not all show Jones as a poor systematist, rather as a perceptive but idiosyncratic and hasty one. Argus (*Syst. Bot. Monog.* 52: 52. 1997) treated *Salix jaliscana* as a synonym of *S. bonplandiana* H. B. K., but in the forested arroyos in Jalisco where I have seen it, it does not look like the ordinary drooping willows of stream banks. Standley (Contr. U.S. Natl. Herb. 23: 1135. 1924) accepted *Fraxinus nummularis* as distinct but thought it was probably a depauperate dry-land form of the more widespread *F. greggii* A. Gray. Woodson (in annotations, 1952), relegated four Jonesian species of *Asclepias*, respectively to *A. pringlei* (Greenm.) Woodson, *A. scaposa* Vail, *A. angustifolia* Schweigger, and *A. rosea* H. B. K. The plants described by Jones were not merely individual variants—they were recognized species that already had names. In the 1890s it would have been extremely difficult for Jones (or Rose) to identify four milkweeds correctly.

Of the four species that Jones described in his *Contribution* no. 18 (1933), viz., *Hymenocallis jaliscensis*, *Apium depressum*, *Arracacia tapalpa*, and *Vernonia viarum*, *Hymenocallis jaliscensis* was accepted by Bauml (in McVaugh, *Fl. Novo-Gal.* 15: 214. 1989). The two umbelliferous species were misidentified, one as to species, the other as to genus. Blake noted (1945, p. 124), that Jones was aware that B. L. Robinson had already named his *Vernonia* specimen no. 288 as *V. deppeana*, but nevertheless proceeded to describe it as a new species.

Lenz pointed out more than once that Jones was not by nature a “splitter,” and this is nowhere shown better than by his work on the genus *Astragalus*, which was his major effort.

Jones’s monographic work on *Astragalus*, beginning about 1893 and culminating in 1923 in his *Revision of the North-American Species of Astragalus* (288 pages + index, synonymy and plates. Salt Lake City, privately printed), shows that his attitude toward new taxa was not always casual. Rupert Barneby, the most prestigious student of American legume-taxonomy in the 20th century, thought well of it (*Mem. N. Y. Bot. Gard.* 13: 6. 1964) when he wrote:

“Jones’s *Revision* initiated a new era in the systematics of *Astragalus*, an era in which the search for natural evolutionary relationships between species and between groups of species began to replace emphasis on similarities in a small, arbitrarily chosen set of morphological characters. The book is full of invaluable information, but is nevertheless an exasperating work. To the novice in *Astragalus* the book is impenetrable [because of the polychotomous keys],

but to the advanced student it is richly rewarding... In his day Jones knew more about *Astragalus* than any man alive, but a volatile impatience with details of presentation tends to obscure that fact.... *His opinions on [species of] Astragalus, as formulated in the Revision, have almost all been vindicated by subsequent scrutiny*" [emphasis by McVaugh, 2004].

On the other hand, Jones's later floristic papers on a Mexican flora that was unfamiliar to him (Jones 1929, 1933; Blake 1945; Morton 1945), deal with a plethora of what he took to be new taxa. Morton and Blake between them, for example, cited and evaluated 60 (!) new taxa published by Jones (in Extr. from Contr. West. Bot. 18, 1933), the names almost all typified by specimens collected in a period of about two weeks, November 13–28, 1930, in the barrancas near Guadalajara (a few from the vicinity of the nearby RR Station at Orendain). As I stated (1972, p. 253), the specimens had been taken from "one of the best-studied localities in Mexico." The barrancas near Guadalajara had been visited by many competent collectors (e.g., Sessé & Mociño in 1791; Galeotti, 1835–1837; Gregg, 1849; Palmer, 1886; Pringle many times from 1888 to 1908; Rose & Painter, 1903). In 1930–1933, it would have been naïve, or rash, or supremely self-confident, to suggest that 60 taxa (representing about one-eighth of all the collections from that locality) might be new to Science.

Jones's collections of 1892 were never enumerated by him as a unit. As far as I can determine, he proposed about 13 new taxa (including two new varieties) based on those collections, proposals spread out over 40 years. As noted above, it seems that he was too busy with his other preferred research, from 1893 through the nineties and well into the 20th century, to go back and study the details of his 752 Mexican collections (his estimate of the number).

After the the field season (March to October) of 1894 was spent in Utah, where Jones was employed as a "Special Field Agent" of the U.S. Department of Agriculture (Lenz 1986, pp. 253–290), his two-year-old Mexican collections must have been low on his list of priorities, and subsequently remained there, with few exceptions.

TRAVELS IN MEXICO IN 1892

Jones left Salt Lake for Mexico on April 11, stopped over in Denver and again at San Marcial, Socorro Co., New Mexico Territory, where he bought a map and a Spanish dictionary. He was in Rincón, Doña Ana Co., New Mexico on April 15, at least long enough to collect one specimen (Zoe 3: 291. Jan 1893). He continued toward the Sierra Mojada, Coah., by a branch railroad from Escalón in the southeastern corner of Chihuahua.

He left Escalón at 6 a.m. on the 18th and reached the mines at Sierra Mojada at 10 a.m. He found it very dry there. He walked two miles up to the upper town, "botanized all day" and part of the next, and returned to the junction at Escalón on the 20th, presumably having completed his survey of the mines on the 19th.

Jones's knowledge of Spanish was spotty. He seems to have managed in the Mexican countryside most of the time, but his spelling of place-names and other names was often not one sanctioned by the dictionary. See his Beriazillos or Berrozillos for Berriosabal, Bota for El Bote, *moso* for *mozo*, Pastorilla for Pastoría, Sacoalco and Sapotlan for Zacoalco and Zapotlán, Salcillo for Saucillo and, as recently suggested by Thomas F. Daniel, Linora for La Noria de los Angeles.

During a part of his 1892 trip he had a helper whom he identified only as "Dillon." Lenz (1986, p. 92) says that Dillon was hired as an interpreter. Jones mentioned him in the diary on June 28, when he paid him one dollar. On July 4th it was \$2. On

June 30th, and again on July 2nd and July 8th he was paid \$5 ("He has become very tiresome"). On the 5th he received \$10, on the 7th \$32, and on the 9th \$50. At this point "Dillon decided to leave me here and return to Mexico, finding at last that he was of no service to me, a fact that I learned a month ago." It would be interesting to know the nature of the original financial arrangement between Jones and Dillon.

According to Lenz (1986, p. 397) Jones reached the city of Zacatecas on April 21, traveling on the main line of the railroad toward the city of Mexico. Figure 1 shows Jones's principal collecting localities in Zacatecas and southward. On the 22nd he visited "the great hacienda or mill below Zacatecas." He collected nos. 578–583 at Zacatecas on April 23 (Lenz 1986, p. 397), but only two of these have been recovered. On the 26th he set out for Casualidad, about 30 km E of Zacatecas near the border between the States of Zacatecas and San Luis Potosí. A railroad line to Casualidad had been proposed but not built, so Jones travelled in a mule-drawn wagon. He arrived in the evening of April 26. He said "It was a region of rolling hills and no vegetation but yuccas and cactus and thorny Leguminosae." He reported visiting the mines on the 27th and in the afternoon "Visited the lead mines (3) of the Potosi Mts. Collected some plants." Cerro Potosí (not to be confused with the very much greater peak of the same name in Nuevo León) is on or very close to the Zacatecas-San Luis Potosí boundary, almost directly east of Zacatecas.

There are few available data pertaining to Jones's next weeks around the city of Zacatecas, a place already long-known for the enormous quantities of silver taken from its mines. Presumably Gen. Palmer was interested rather in new sources of valuable minerals, not excluding silver. Lenz (1986, p. 91) says of Jones, "From [April 21] until May 18, he examined mines and botanized in the general vicinity of the city [of Zacatecas]... He reached Mexico City by train on May 29." We know from Jones's specimens and his diaries, and from an account of his travels that he dictated many years later, that he took a side-trip of about two weeks, beginning from Ojo Caliente (ca. 40 km SE of Zacatecas), into the arid high plains farther east, camping as he said "among the yuccas." In another place he wrote that Ojo Caliente, Pastorilla, Linora, and Ramos are all in the same region southeast of the city of Zacatecas.

In 1892 Ojo Caliente was the last station on a railroad line to the southeast of the city of Zacatecas and a logical place from which to set off for the mining areas further east and southeast, where the States of Zacatecas, Aguascalientes, and San Luis Potosí adjoin. Including Ojo Caliente (Zac.), the localities most often named in Jones's diaries and other papers are Pastoría ("Pastorilla" of Jones), Zac. (about 20 km SE of Ojo Caliente); Ramos, S. L. P.; and "Linora" (I take this to be Jones's version of [La] Noria de Angeles, Zac., which is about 10 km S of El Carro, Zac. El Carro in turn lies about 15 km ["8 miles" according to Jones] E of Pastoría).

As Lenz tells (1986, p. 347), on April 28th Jones was at the "Corkhills mine" and "later all the folks went with us to Las Animas and left us. Then drove to Covison." On the 29th (Jones diary), "Mr. Foreman took me over to La Paz and young Portus [?Portis] showed me through the Covison mine. p.m. drove to Ojo Caliente by 3 p.m." He was in Ojo Caliente, April 29, 30; [presumably on May 1, he], "Rode from Ojo Caliente 15 m. to Pastorilla [Pastoría] by noon where we found much lead... p.m. rode to Linora 15 m." May 2 [he collected] no. 228, no. 568; May 3, rode [from Linora] to Ramos, S. L. P. [the settlement and the mine of the same name], 18 mi from Pastorilla; May 4 rode to Salinas, S. L. P. (SE of Ramos), collected nos. 572–574; he was in Ramos May 5, left Ramos at 7 a.m. on May 6, rode to El Carro, (Zac.), visited the San Miguel quicksilver deposits at San Miguel and at a "lake near San Miguel" collected at least nos. 157 and 585–592, May 6–7; on May 7 left for Pastorilla ca. "8

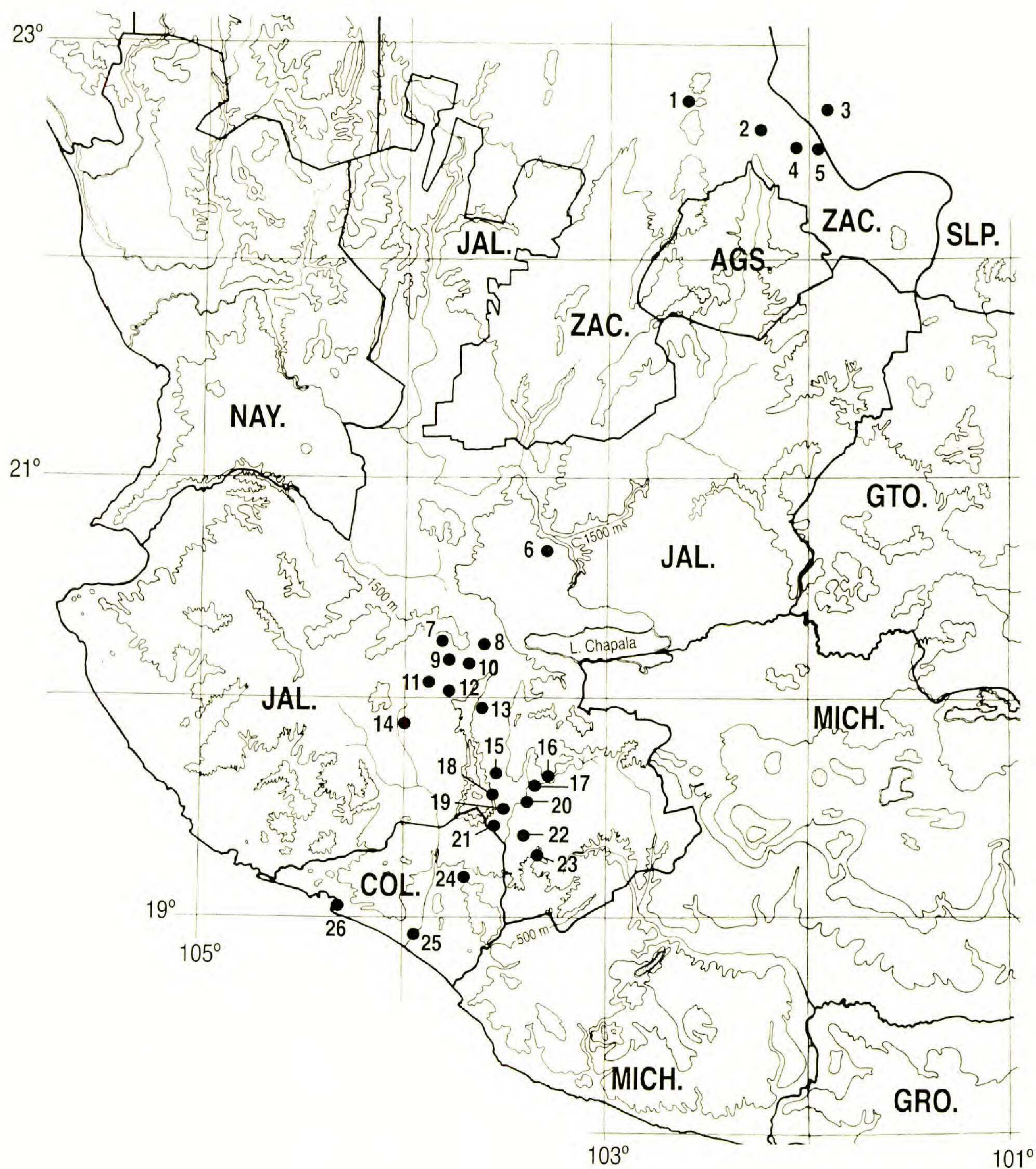


FIG. 1. Principal localities from Zacatecas southward at which Marcus E. Jones collected in 1892.

Numbered localities (all in Jalisco, except nos. 1–5, 24–26)

- | | |
|---------------------------------------|------------------------------------|
| 1. Zacatecas, Zacatecas | 14. Santa Cruz |
| 2. Ojo Caliente, Zacatecas | 15. Zapotlán del Rey ("Sapotlan") |
| 3. Ramos, San Luis Potosí | 16. Tamazula (de Gordiano) |
| 4. Pastoría ("Pastorilla"), Zacatecas | 18. "Volcano of Colima" |
| 5. El Carro, Zacatecas | 17. Santa Cruz #2 |
| 6. Guadalajara | 19. San Marcos |
| 7. Saucillo ("Salcillo," "Salsillo") | 20. Tuxpan ("Tuzpan") |
| 8. Zacoalco (de Torres) ("Sacoalco") | 21. Tonila |
| 9. Chiquilistlán | 22. La Higuera ("Rancho Guerrero") |
| 10. Ferrería (de Tula) | 23. Pihuamo |
| 11. La Palma | 24. Colima, Colima |
| 12. Tapalpa | 25. Armería, Colima |
| 13. Sayula | 26. Manzanillo, Colima |

mi W of El Carro,” and on May 9 he was back in Ojo Caliente to collect nos. 151 and no. 158. It would be interesting to know how much time he spent in prospecting for minerals, aside from lead on May 1 and quicksilver on May 6.

On May 9, Jones went to Berriozabal (“Bereazillos”), a station on the main line of the railroad ca. 10–12 km SW of Ojo Caliente [which was not on the main line but the end of track on a parallel line from Zacatecas], “botanized all day” and reached Zacatecas by train at 6 p.m.

Lenz (1986, p. 303) reports that on May 14 Jones was at “Bota” (El Bote, a station on the main line of the railroad), ca. 5 km NW of Zacatecas. On the 15th Jones collected no. 614 (*Nama hispidum*, at POM) at “Santa Rosalia, Mex.,” presumably near Zacatecas. Collections from around Zacatecas include no. 585, May 16, and no. 123, June 23. His travels after leaving Zacatecas have been described by McVaugh (1972, pp. 250–252) and by Lenz (1986, pp. 91–93).

Jones travelled by rail from Zacatecas to México, D. F., on May 19. He continued by rail to Irapuato, Gto., where he spent Sunday (May 22) before continuing to Guadalajara, Jal., on the 23rd and Sayula on the 25th. There he stayed for two days, assembling what he needed for an overland pack trip beyond the railroad, “over the Tapalpa Mountains to Chiquilistlán.”

Evidently his instructions from General Palmer had indicated some mineral deposits of special importance in the vicinity of Chiquilistlán, which is a small well-established town, 20–25 km north and a little west of Tapalpa and separated from it by high steep forested ridges. In Sayula Jones hired a “moso” [*mozo*; a muleteer; an *arriero*] and 4 mules and set out for Tapalpa at 6 a.m. on the 27th. As he said, “the ascent to 9000° on the mts. is steep” [but his estimate of the altitude was high—the road-summits are closer to 7000 feet (2100–2200 m)]. Sayula lies below, at the level of a series of shallow and seasonally dry lake-beds, and even now the improved road to the forested mountains around Tapalpa is very steep and tortuous. Evidently Jones reached Tapalpa by midday. He went to the nearby rancho of Ferrería [de Tula] [some 12–15 km northeast of Tapalpa] “in p.m. Saw the good iron works at Ferrería. Slept there. The manager was very kind.”

On the following day (May 28) Jones left Ferrería for Chiquilistlán, “and reached there in p.m. with guide.” I infer that his guide took him by some direct route northwesterly, not via Tapalpa as the modern highways go. [Lenz (1986, p. 312) says that Jones was in Chiquilistlán on May 13th, but other records show that he was in or

FIG. 1 continued

Contour lines are approximated at 500, 1000, and 1500 m above sea level and up to 3000 m on the Nevado de Colima. The river, in the valley that extends northward from the ocean (where it forms the boundary between Colima and Michoacán), is known successively as the Río Coahuayana, Río Tuxpan, or (as Jones knew it) Río Cuvianes. Localities where plants were collected in April and up to mid-May, in New Mexico, Coahuila, San Luis Potosí, and extreme eastern Zacatecas, I studied less assiduously and did not map all of them.

Localities marked by dots are those from which Jones obtained a significant quantity of plant specimens (usually 25 gatherings or more). Five are in southern Zacatecas, one in San Luis Potosí, the others in Jalisco or Colima. A few less-productive localities are shown, because they are difficult to locate on published maps. Guadalajara, Jal., is shown because it could be reached by railroad and was the center whence Jones set out for the south.

Most of the localities discussed and mapped here are to be found on the *Map of Hispanic America* [at] 1: 1, 000, 000, published by the American Geographical Society, and in the index to that map (Publ. no. 5, Vol. 2, *Geographical Names in Mexico*. U.S. Govt. Printing Office, 1944). A few additional localities are discussed in the present text.

near Zacatecas on that day.] He spent the next few days in and near Chiquilistlán, looking at mines with the cooperation of the *Gerente*, a Mr. Vasques [?Vázquez] (see McVaugh 1972, p. 250). May 30 and 31 he visited "3 or 4 of the mines of Vasques and slept at the Santa Maria. Fine scenery and deep cañons." On the 31st he returned from the Santa María mine and visited the Vasques hacienda.

On June 1 Jones interrupted his stay at Chiquilistlán in order to visit iron and mercury mines at a place he called Salcillo (or Salsillo), where he spent the night at a ranch. On the 2nd he "went over from Salsillo and saw the rest of the mercury mines and the 'Colorado' iron. Then returned to Chiquilistlán and went over near the Santoninia and saw another iron mine, on the opposite (n.) side of the river." The location of Jones's "Salsillo" is not entirely clear, as I find nothing in his notes about distance or direction from Chiquilistlán. Lenz (1986, p. 374) equated it with El Saucillo, [Jalisco], which he located in the State of Zacatecas, "about 18 miles northwest of Zacoalco [de Torres]." This is apparently the same El Saucillo that is about 10 km north of Chiquilistlán, in the same river valley (McVaugh 1972, p. 350). It may well have been Jones's locality, as McVaugh (1972) agreed. For another possible locality, see under "Saucillo" in the list of localities below.

Back in Chiquilistlán on June 3rd, Jones left rather belatedly for Santa Cruz. Lenz (1986, p. 378) says that Santa Cruz was about 12 miles south-southeast of Ameca. The settlement at that point is Santa Cruz de las Flores, but it seems doubtful that the Santa Cruz of Jones is the same. In his journal he described his trip from Chiquilistlán: "traveled all day [apparently south-westwardly], & stopped at a ranch 6 m. east. Country very rugged & breaks down to the west." He reached Santa Cruz at 10 a.m. on the 4th, "Visited 3 mines in p.m. No good. Alt. 2650° [ca. 900 m]." June 5th being Sunday, Jones spent the day quietly. "Went down to the river to bathe." The information that he gives does not seem to apply to Santa Cruz de las Flores, which is nearly north of Chiquilistlán, across the mountains in the basin of the Río de Ameca where the drainage is toward the north, at an elevation of about 1500 m. I suggest that his Santa Cruz may have been the place shown on the AGS map at 1/1,000,000, sheet NF 13, ca. 30 km (airline) SW of Tapalpa in the valley of one of the upper tributaries of the Río de Armería, at an elevation of less than 1000 m, where the country "is rugged and breaks down to the west" (the elevation at Santa Cruz thus agrees well enough with Jones's estimate). The matter might be settled by reference to some authoritative work on Mexican mines of the period, as Jones visited three mines there on June 4, and on June 6 he visited the Santo Domingo mine, and spent some time developing photographic "views." He also names mines that he visited at La Palma. Of the trip (June 7th) from Santa Cruz to La Palma, Jones (in his diary) said, "Left for La Palma in a.m. Reached there late in eve. The worst road of all. Ascended 3000° and down 1500°. Found many plants on the way."

On June 8th Jones "visited the San Rafael mine [evidently from his base at La Palma] and stayed there all night." The next day he "returned from the San Rafael and saw the Mexicana and stayed all night at La Palma. Botanized a good deal." On the 10th "Left La Palma early with 2 pack animals and reached Tapalpa by noon... Reached Sayula at 9 o'clock at 9 p.m."

Additional bits of information may be gleaned from Jones' specimens and his notes on them. In describing *Hymenocallis jaliscensis* (Extr. from Contr. West. Bot. 18: 33. 1933), he cited "Saucillo ['Salcillo'], Jal., June 1, also at La Palma near by," and one of his specimens (no. 47) is labelled as from "Santa Cruz near La Palma."

This marked the end of his travels to the vicinity of Chiquilistlán and Tapalpa. From Sayula he took off for Zapotlán el Grande and the borderlands of Jalisco and

Colima, more or less southward along the line of the present railroad, and east of the massif of the Nevado de Colima and the associated highlands northward toward Tapalpa.

Jones left Sayula for Zapotlán on June 11, a trip of about 25 km to the southeast that occupied about 3 hours. Lenz (1986, p. 307) quoted him as saying, "Returning to Sayula I took the stage for Sapotlan which was the terminus of coach travel... Here I outfitted with burros and mules for Colima." On June 13th he set off at 10 a.m., southward toward Santa Cruz [not the Santa Cruz where he was from June 3rd to 10th]. "Went to Santa Cruz by night" (Jones diary). On the 14th, "Went to the ironworks and to Tamazula." Formerly (McVaugh 1972, p. 349) I equated this Santa Cruz of Jones with the Sta. Cruz of Mariano Bárcena (Ensayo Estadístico del Est. de Jalisco. Anal. Min. Fom. Rep. Méx. 9: 342, 349, 460. México, 1891), which was associated with the Río Covianes (the upper reaches of the Río Tuxpan). I have not located Santa Cruz on any map, but I now suspect that Jones went to Tamazula [de Gordiano] by turning east and northeast through Zapotiltic before reaching Tuxpan, and that the "ironworks" and Santa Cruz were both on the way, perhaps near Zapotiltic, and near the Río Tuxpan (which Jones called Río Cuvianes). Lenz (1986, p. 370), under Río Cuvianes, quotes, "Río Cuvianes, June 13, nos. 641–653J." A specimen of *Chamaesyce hirta* at US (no. 423) bears the inscription, "Rio Cuvianes near Santa Cruz."

On June 15th Jones "Spent half a day at Tamazula and went [back down the Río Covianes or Tuxpan] to Tuzpan," then on the 16th turned south for ca. 15 km to La Higuera [also called Rancho Higuero or Rancho Guerrero, or as by Lenz (1986, p. 369) Rancho Guerrero], where he visited the Muerto mine. The next day (17th) he left "in a.m." and drove southeasterly for ca. 18 km to Pihuamo, where he arrived at 11:30 a.m. He must have visited the Purissima mine that afternoon, for on the 18th he "returned from the Purissima mine and looked at the placeres [placer mines] in p.m. Botanized, very hot. Poured down in p.m." On the 19th (Sunday, on which day Jones never worked), he spent the day "doctoring the sick político" who had a bullet wound in his hip. On the 20th he "left Pihuamo at 7 o'clock and reached Tonila at 3 p.m. Good road" (it is northwest, 18–20 km, airline, so he must have averaged about 3 km per hour). He spent the next day, June 21, going some 12 km to San Marcos and returning to Tonila. "Botanized."

Thus in a week Jones worked his way down the valley of Río Tuxpan a distance of 75 km or so, botanizing as he went while making professional visits to various working mines and potential mineral sites. On June 22 he turned away from the river valley, southwesterly some 30 km to the city of Colima, then the next day by train to the Pacific coast at Manzanillo, a 4-hour trip. "Took some photos and botanized a little."

For the next three days, June 24–26, Jones's diary is uninformative. For each day there is an entry "Went over to Stadden's ranch." On two of the days it was "Stadden's ranch and the sea." On one day Jones wrote, "Got many facts." I find no reference to the name Stadden in Lenz (1986), but in the same work (p. 352) there are two bare references to Jones's visits to "the Stodden ranch" (or Stodden's ranch) on the 24th and 25th. I have no further information about Stadden/Stodden. The city of Manzanillo is built on a wide place at the western end of the coastal sandbar, south of the famous bay of the same name. To "go over" to the sea and the ranch, Jones may have gone 3 to 5 km southward, across the closed end of the coastal lagoon.

On June 27th and 28th, Jones made a quick trip inland by rail from Manzanillo to Armería. He spent the 27th at the ranch of General Maltina [?Martínez], having gone

up on a "special" [presumably laid on by the General] to the ranch of 81,000 acres. Jones was much impressed by the variety of crops produced at the ranch, but his diary says nothing about mines or mining. The next day he "returned to Manzanillo from Armeria, and then returned to Colima." There he spent the next 8 days, beginning on June 29, doing (as he said) "very little," developing photographic plates, and doing some "botanizing" (noted on June 30, July 1 and 2). He made local excursions to Jayamita to see a saltpeter mine (July 1), to an unspecified locality to see "a coal, mica and gypsum mine, only gypsum there" (July 2), to Rancho Magdalena to look at a marble mine" (July 4-5). According to Lenz (1986, p. 351), Rancho Magdalena was about 8 miles SW of the city of Colima. At about that distance from the city the 20th-century highway to Armería and Manzanillo passes through an extensive area of rugged hills that support a rich flora of calciphiles and gypsophiles. It may be that Jones visited this area on July 1 and returned on July 2nd, 4th and 5th.

It was at this time that he parted with his helper, "Dillon," as described above. On July 7th, Jones left Colima in the morning and reached Tonila, Jal., at 2 p.m. At the time of his visit the state boundaries where Colima, Jalisco, and Michoacán come together were not fully agreed upon, and some of Jones's specimens from San Marcos and Tonila were labelled as from Colima, and some from Pihuamo as from Michoacán.

The next morning (July 8th) he left at 7:30 a.m. and came to Pihuamo at 5 p.m. On the 9th he "visited the Purissima mine & took samples," and at 1 p.m. started back for Tonila, found the river too high to cross but managed to reach Tuxpan at night. On the 10th (Sunday) he "crossed the river early and reached Tonila at 9 a.m." The "ferriage" was \$0.56.

He spent the night of July 10-11 in Tonila. On the 11th, according to his diary, "Tried to get outfit to start for the Volcano today but could not. Botanized. Rained hard yesterday and in the night." The cost of his hotel room was \$1.87. He must finally have obtained his "outfit," for on the 12th he "Left Tonila at 4 o'clock a.m. for the Volcano. Traveled till 12 o'clock and then was about 1 mile from base of volcano but above it. 9250° alt ± Deep barranca between. Guide & I went over to Volcano & back in 4 hours." Presumably they camped upon their return.

At the time of his visit, the volcano proper (the Volcán de Fuego) was erupting actively every two weeks (according to Jones; see Lenz, 1986, p. 92, who quotes a long paragraph from a newspaper interview that Jones gave about two weeks after his visit to the volcano). The altitudes that he mentioned appear to be on the low side. His figures were 12,000 feet (3,600 m) for the volcano proper (the Volcán de Fuego) and 13,000 feet (3,900 m) for the northern peak, the Volcán de Nieve. The accepted figures today are approximately 3,850 m and 4,340 m, respectively.

On July 13, as recorded in Jones's diary, they left after a very cold night at an elevation of perhaps 10,000 feet (estimated from his own figure of 9,250 ft). They broke camp at 7:30 a.m. and ascended to 10,500 feet [perhaps actually 11,000 or more], "at [the] pass on north side of Nevada de Colima and descended nearly to base of Mt. by 5 p.m. Rained for 2 hours. Everything wet on the ground. Camped under a madrona [sic] tree on the grass. Rain eased at 6 p.m. Not cold." Jones did not go into more detail about their route from their first camp, but it was evidently along the eastern flank of the Nevado. The airline distance was hardly more than 15 km, but the many barrancas radiating down from the peak meant that they had to travel a much longer and more difficult road if Jones wanted to collect at elevations even as much as 3000 m.

Jones and his guide left their highland camp at 7 a.m. on July 14, rode down to Zapotlán in 4 hours, paid off the extra mules he had hired in Colima, and set off at 2 p.m. "with old Juan and 4 animals for Guadalajara. Reached Sayula at 7:30 p.m. "

After breakfast on the 15th, he "Left Sayula at 5 a.m. Rode all day to Sacoalco. Collected some. Warm in p.m. Reached Sacoalco at 4 p.m." The diary for July 16 records nothing more than some expenses for Jones himself, "& moso & boy overnight." The same day, however, he must have continued on to Guadalajara, though his diary does not confirm this until July 18, when he "Left Guadalajara at 9 a.m. & went to Irapuato and Celaya." By that time he was on his way home; on July 17th he had received a telegram telling him that "father is very sick."

INDEX TO LOCALITIES VISITED BY JONES IN 1892
FOR GEOLOGICAL AND BOTANICAL INVESTIGATION,
WITH NOTES ON LOCALITIES AND COLLECTIONS

Some of the following data are repeated from the account in the text (pages 23–33), where the emphasis is on itineraries, not on collections. Unless otherwise specified, notes on localities are based on information from Jones's specimens, from Lenz (1986), or from manuscript material at RSA.

Animas, Las, Zac.—Presumed to have been the Estancia de Animas, as on Carta Geog. Zacatecas 1/500,000 (1943) and other maps, at long. 102°, ca. 20 km WSW of El Carro, Zac., and 20 km E by N of Pastoría; visited by Jones, 28 April. See Linora and Ojo Caliente.

Armería, Col.—12 collections seen, all dated 28 June. Typical plants of coastal lowlands, including *Acrostichum*. Called by Jones "General Martina's ranch," said to include 81,000 acres. Jones spent the day of 27 June there, then returned to Manzanillo and to Colima.

Berriozabal ("Beriazillos"), Zac.—No specimens seen. Lenz (1986, p. 300) says, "On railroad 35 miles south of Zacatecas, at 6800 ft." It is ca. 10–12 km SW of Ojo Caliente [which was not on the main railroad line but at the end of track on a parallel line from Zacatecas]. Jones was there on 9 May, "botanized all day" and reached Zacatecas by train at 6 p.m.

Bota (El Bote), Zac.—A railroad station near Zacatecas, 14 May.

Carro, El, Zac.—Also known for a time as Villa Glz. Ortega. Ca. 20 km N of [La] Noria de Angeles, 25 km SW of Salinas, S. L. P., and according to Jones, "8 miles E of Pastorilla." See the text above for his travels on May 5 and 6 from Ramos to El Carro, to San Miguel and a nearby brackish lake, and his eventual return to Pastorilla.

Casualidad, Zac.—9 collections seen, dated 26 or 28 April. Plants of arid shrubland (*matorral*). On the 26th Jones set out for Casualidad, about 30 km E of Zacatecas near the border between the States of Zacatecas and San Luis Potosí. A railroad line to Casualidad had been proposed but not built, so Jones travelled in a mule-drawn wagon. He arrived in the evening of April 26. He said "It was a region of rolling hills and no vegetation but yuccas and cactus and thorny Leguminosae." He reported visiting the mines on the 27th, and in the afternoon "Visited the lead mines (3) of the Potosi Mts. Collected some plants."

Chiquilistlán, Jal.—About 50 collections seen, dated 28 May to 2 June, except nos. 207 (*Mimosa*), 355 (*Stemmadenia*), and 470 (*Karwinskia*), dated respectively 13, 15, and 19 May, at which times Jones was in or near Zacatecas. Plants of oak forest, dry deciduous forest or *matorral*. During his stay at Chiquilistlán Jones visited the nearby Vasques (?Vázquez) mines (“3 or 4 of them”), slept at the Santa María on 30 May and returned to Chiquilistlán and visited the Vasques hacienda on the 31st. Left for Saucillo on 1 June, returned the next day and “went over to the Santoninia mines and also another iron mine on the other side of the river.” Left for Santa Cruz early on 3 June.

Coahuayana, Río, Col./Mich.—The river, in the valley that extends northward from the ocean (where it forms the boundary between Colima and Michoacán), is known successively as the Río Coahuayana, Río Tuxpan or (as Jones knew it above Tuxpan, Jal.), Río Cuvianes. See Fig. 1.

Colima, Col.—About 40 collections seen, dated 30 June to 5 July. Jones worked in and near Colima from 29 June to 6 July, and passed through earlier on his way to Manzanillo and Armería. Plants of relatively humid forests of coastal foothills, including various calciphiles. From a base in Colima Jones “botanized a little” on 30 June; on July 1 he went to see a saltpeter mine (and botanized) at Jayamita, q.v.; on the 2nd he went to see a “coal, mica, and gypsum mine, only gypsum there” (he botanized); on the 4th he went to see “marble at Rancho Magdalena” and on the 5th he returned to Colima.

Corkhills mine, see Ojo Caliente.

Covison (mine), S. L. P.—One collection, identified as *Ferocactus latispinus* by G. Lindsay (POM 83294), includes a long, typed description. On 29 April Jones was escorted to the “Covison mine” at or near La Paz, after which he returned to Ojo Caliente, Zac. Apparently Covison was never mentioned by Jones as a settlement, but only as this mine in the vicinity of La Paz.

Cuvianes (*Cavianes*, *Covianes*, *Cuvianus*), Río, Jal.—About 25 collections seen, all dated 13 June. Jones travelled on 13 June from Zapotlán toward Tamazula, reaching Santa Cruz #2 at night, presumably having gone at least a part of the way up the river. Plants include many lowland ruderal weeds. See Coahuayana, Río.

Escalón, Chih.—Jones changed trains here. He continued toward Sierra Mojada, Coah., by a branch railroad from Escalón in the southeastern corner of Chihuahua. He left Escalón at 6 a.m. on 18 April, and reached the mines at Sierra Mojada at 10 a.m. He found it very dry there. He walked two miles up to the upper town, “botanized all day” and part of the next, and returned to the junction at Escalón on the 20th, presumably having completed his survey of the mines on the 19th.

Ferrería, (de Tula), Jal.—About 25 collections seen, dated 28 May (one 27 May). Plants are those of moderately dry montane forests. It appears that on 27 May Jones passed through Tapalpa on the way to Ferrería, which he reached

in the afternoon. He went to the nearby rancho of Ferrería [de Tula] [some 12–15 km northeast of Tapalpa] “in p.m. Saw the good iron works at Ferrería. Slept there. The manager was very kind.” The next day (28th) he found a guide to take him to Chiquilistlán.

Guadalajara, Jal.—Jones arrived by rail from Irapuato, Gto., 23 May at 4:45 p.m., and continued (presumably by rail) to Sayula on the 25th. There he stayed for two days, assembling what he needed for an overland pack trip beyond the railroad, “over the Tapalpa Mountains to Chiquilistlán.”

Guerro (or Guerrero or Querro), Rancho, Jal. 15 June. See La Higuera.

Higuera, La, Jal.—Five collections seen, all dated 15 June. From Jones’s account it appears that he did not reach La Higuera until 16 June, arriving from Tuxpan. See Muerto (mine). The next day (17th) he drove to Pihuamo. Plants are typical shrubs of foothill deciduous forest.

Irapuato, Gto.—Jones passed through this city both coming and going, from Zacatecas toward Guadalajara, Jal., 22 May, and northward toward home on 18 July.

“Iron works” (or mines), not otherwise named, see Chiquilistlán, Ferrería, Santa Cruz #2, and Tamazula.

Jayamita, Col.—Four collections seen, all dated 1 July. A duplicate sheet of no. 83, “*Euonymus*” (*Acalypha coryloides*) 1 Jul POM 84508, is labelled “Jayamita, Jalisco.” Plants are shrubs from the relatively humid deciduous forests of the coastal foothills. Jayamita is not mapped in Fig. 1, as I have not been able to find it on any other map. Jones was in Colima City early in July. He made local excursions, to Jayamita to see a saltpeter mine (1 July), to an unspecified locality to see “a coal, mica and gypsum mine, only gypsum there” (2 July), to Rancho Magdalena to look at a marble mine” (4–5 July). It seems likely that all these excursions were toward the rocky calcareous areas to the southwest of Colima.

Linora, (Zac., according to Lenz, 1986, p. 349).—Also for a time called Villa Obregón, as on Carta Geog. Zacatecas 1/500,000, 1943; Jones, on 1 May, “Rode from Ojo Caliente 15 m. to Pastorilla [Pastoría] by noon where we found much lead... p.m. rode to Linora 15 m.” He visited at Linora and stayed over night, 2–3 May [he collected] no. 228, no. 568; on 3 May he rode [from Linora] to Ramos, S. L. P. [the settlement and the mine of the same name], 18 mi from Pastorilla. Jones’s “Linora” seems to have been [La] Noria de Angeles, ca. 30 km SW of Salinas, S. L. P., and 20 km S of El Carro, Zac.

Magdalena, Rancho, Col.—On the 4th of July Jones went from Colima to see “some marble at Rancho Magdalena” and on the 5th he returned “from seeing marble mine,” apparently having been forced to stay over by a very hard rainstorm.

Maltina (?Martínez), General, ranch, see Armería.

Manzanillo ("Manzanilla"), Col.—About 25 collections seen, dated 25 June (one on 26 June). Note on 23 June, "Botanized a little." Plants are those typical of the coastal hills, and maritime rocks, sands, and lagoons. On 24, 25, and 26 June the entries read "Went over to Stadden's ranch and to the sea," evidently from a base in Manzanillo across the dilated end of the coastal sandbar on which the city stands.

Mexicana, mine, see Palma, La.

Mexico City (México), D.F.—Jones reached Mexico City by train on 19 May, en route from Zacatecas to Irapuato, Gto., and Guadalajara. Jal. Lenz (1986, p. 353) quotes him as saying that he collected plants "along the lakes below Mexico City," but I find no record of any such plants. Jones left for Irapuato on 21 or 22 May.

Milagros ("Milleagres," "Milleagros"), Los, Zac.—Two collections of cacti seen, a few others probably collected, date of 4 May. Jones was making a side trip from Zacatecas City and Ojo Caliente to a series of ore prospects in arid eastern Zacatecas and adjacent San Luis Potosí. He recorded that he went (about 20 km SE) from Ojo Caliente to Pastoría ("Pastorilla"), presumably on the first of May. Milagros is about 12 km W of Pastoría, thus not on a direct line from Ojo Caliente, but his route may have taken him that way. On the 4th of May, Jones was traveling from Ramos, S. L. P., to Salinas, S. L. P., so perhaps his plants from Milagros were collected before that.

Mojada, Mojada Mts., see Sierra Mojada.

Muerto, (mine), Jal., visited from La Higuera, q.v., on 16 June.

Noria de Angeles, La, Zac.—Thought to have been the place called "Linora" by Jones. See under Ojo Caliente.

Ojo Caliente, Zac.—About 30 collections seen, mostly dated 9 May, most of the plants typical of arid shrubland. "*Acacia constricta*" (= ?*Mimosa*), no. 587. is dated 30 April (POM 28438).

According to Lenz (p. 347, under La Paz), on Apr 28th Jones was at the "Cork-hills mine" and "later all the folks went with us to Las Animas and left us. Then drove to Covison." On the 29th (Jones diary), "Mr. Foreman took me over to La Paz and young Portus [?Portis] showed me through the Covison mine. p.m. drove to Ojo Caliente by 3 p.m. " He was in Ojo Caliente, Apr. 29, 30, [presumably on May 1, he], "Rode from Ojo Caliente 15 m. to Pastorilla by noon where we found much lead... p.m. rode to Linora 15 m." May 2 [he collected] no. 228, no. 568; May 3, rode [from Linora, which see] to Ramos, S. L. P. [the settlement and the mine of the same name], 18 mi from Pastorilla; May 4 rode to Salinas, S. L. P. (SE of Ramos), collected nos. 572–574; he was in Ramos May 5, left Ramos at 7 a.m. on May 6, rode to El Carro, (Zac.), visited the San Miguel quicksilver deposits at San Miguel and at a "lake near San Miguel" collected at least nos. 157 and 585–592, May 6–7; on May 7 left for Pastorilla ca. "8 mi W of El Carro," and on May 9 he was back in Ojo Caliente to collect nos. 151 and no. 158. It would be interesting to know how much time he spent in prospecting for minerals, aside from lead on May 1 and quicksilver on May 6.

Palma, La, Jal.—About 65 collections seen, all dated 7, 8, or 9 June. Plants indicate a semi-humid tropical deciduous forest with many ferns, orchids, *Piper*, *Ficus*, *Jarilla*, *Dorstenia*, *Pinguicula*, and also some elements from more temperate floral zones, as *Coriaria*, *Ranunculus*, *Valeriana*, *Polianthes*. From La Palma Jones visited the San Rafael mine and stayed all night there. On 9 June he returned from the San Rafael, saw the Mexicana mine and stayed the night at La Palma. “Botanized a good deal.” On June 10th he went on to Tapalpa by noon.

Pastoría (“Pastorilla”), Zac.—Seven collections seen, dated 2 May (No. 316, 7 May, *Asclepias longicornu* POM 75835). Jones was in Pastoría more than once between 1 May and 8 May, also visiting Linora, Ramos, Salinas, and San Miguel. See these in the text above and see also Ojo Caliente, Zac.

Paz, La, S. L. P.—Said by Lenz (1986, p. 347) to be SE of Zacatecas City. On 29 April (Jones diary), “Mr. Foreman took me over to La Paz and young Portus [?Portis] showed me through the Covison mine. p.m. drove to Ojo Caliente by 3 p.m.” This is assumed to have been the place called San Antonio de la Paz, shown on the Mapa de México at 1/250,000 and on some modern highway maps, e.g., *Est. Zacatecas 1/800,000* (Guía Roji, undated), where it is located just S of Hwy. 49, ca. 20 km S of Ramos, 12 km W of Salinas, and 25 km NE of [Las] Animas, Zac. See Ojo Caliente.

Pihuamo, Jal. (“Michoacan” of some of Jones’s labels).—About 25 collections seen, four dated 20 June, the others 16 June. Jones is said to have arrived at Pihuamo from La Higuera on 17 June, 11:30 a.m. He must have visited the Purissima mine that afternoon, for on the 18th he “returned from the Purissima mine and looked at the placeres” [placer mines] in p.m. Botanized, very hot. Poured down in p.m.” On the 19th (Sunday, on which day Jones never worked), he spent the day “doctoring the sick político” who had a bullet wound in his hip. On the 20th he “left Pihuamo at 7 o’c and reached Tonila at 3 p.m.” If his collections are correctly dated, it seems they must have been taken between La Higuera and Pihuamo on the 16th and between Pihuamo and Tonila on the 20th. On 8 July he returned to Pihuamo from Tonila, on the 9th he revisited the Purissima mine and “took samples.”

Placeres (placer mines), see Pihuamo.

Potosi Mts., Zac.—No specimens seen, though Jones reported in his diary for 27 April, “Visited the lead mines (3) of the Potosi Mts. Collected some plants.” See Casualidad, Zac. Cerro Potosí is the high point in an isolated range; it is about 50 km E of Zacatecas and 20 km NE of Ojo Caliente, nearly on the line between Zacatecas and San Luis Potosí.

Purissima (mine), see Pihuamo.

Ramos, S. L. P.—Four specimens (and four duplicates) seen, dated 3–5 May. Jones took a side-trip of about two weeks, beginning from Ojo Caliente (ca. 40 km SE of Zacatecas), camping in the arid high plains farther to the east. He wrote that Ojo Caliente, Pastorilla, Linora, and Ramos are all in the same region of rolling hills with no vegetation but yuccas and cactus and thorny Leguminosae. See also Salinas.

Rincón, Doña Ana Co., N. Mex.—Jones stopped here on April 15, en route to Mexico on the railroad, at least long enough to collect one specimen (Zoe 3: 291. Jan 1893).

Sacoalco, see Zacoalco.

Salcillo, see Saucillo.

Salinas, S. L. P.—Three specimens seen, all dated 4 May, one (no. 573, *Opuntia* sp., POM 83285) with additional note “Camp Silvio”). According to Lenz (1986, p. 374) nos. 572–574 were collected at Salinas. The locality (elev. ca. 2100 m) is ca. 30 km SE of Ramos, q.v., and 25 km NE of El Carro, Zac. Jones rode from Ramos to Salinas on 4 May and returned the same day or the next.

San Marcos, Jal. (“Colima”).—About 20 collections seen, all dated 21 June. About two-thirds of them are ferns or fern-allies. Lenz (1986, p. 377) says that Jones spent the day of June 21st going from Tonila to San Marcos and returning, to which Jones’s diary added “Botanized.” San Marcos lies in the foothills, at ca. 1000 m elevation, near the beginning of the steeper ascent into the high volcanoes. In early July when Jones started northward along the flank of the volcanoes, he began from Tonila but climbed somewhat to the west of San Marcos.

San Miguel, Zac.—Apparently very close to El Carro, q.v. Twelve collections seen (incl. 2 duplicates), dated 6 May except one dated 16 May. Seven are labelled “Lake” or “Borders of a lake” near San Miguel, one copied label reads “Lake Ness San Miguel” and one “near San Miguel. Margin of brackish lake.” Plants are those of dry highland grasslands, incl. one (*Marsilea*) typical of depressions in grassland. Jones left Ramos, S. L. P., at 7 a.m. on May 6, rode to El Carro, Zac., visited the San Miguel quicksilver deposits at San Miguel and at a “lake near San Miguel” collected at least nos. 157 and 585–592.

San Rafael, mine, see Palma, La.

Santa Cruz, Jal. (ca. 25 km a little S of W of Tapalpa).—About 45 collections seen, dated 3–7 June except for three collections dated 14 June, q.v. under Santa Cruz #2. Jones left Chiquilistlán on 3 June, reached Santa Cruz at 10 a.m. on the 4th. See also Santo Domingo (mine), visited 6 June. Plants collected at Santa Cruz are those of somewhat humid upland deciduous forest. On 7 June Jones (in his diary) said of his trip from Santa Cruz to La Palma, “Left for La Palma in a.m. Reached there late in eve. The worst road of all. Ascended 3000° and down 1500°. Found many plants on the way.”

Santa Cruz No. 2, Jal., on the Río Tuxpan (“Cuvianes”) below Tamazula.—On June 13th Jones set off from Sayula at 10 a.m., southward toward Santa Cruz [not the Santa Cruz where he was from June 3rd to 10th]. “Went to Santa Cruz by night” [Jones diary]. On the 14th, “Went to the ironworks and to Tamazula.” About six collections seen, dated 14 June; one labelled “Santa Cruz near Tapalpa” and one “Santa Cruz No. 2, near La Palma.”

Santa María, mine, see Chiquilistlán.

Santa Rosalía, [Zac.]—"Nama hispidum" (*spathulatum*); only the one specimen seen, the locality presumably near Zacatecas, Zac., where Jones was based during early May. No. 614, 15 May (POM 73490).

Santo Domingo, mine, visited 6 June; see Santa Cruz.

Santoninia, mine, see Chiquilistlán.

Sapotlán, see Zapotlán.

Saucillo, Jal. ("Salcillo" or "Salsillo").—About 22 collections seen, dated 1 June (one dated 2 June). The plants are mostly those of the semi-arid upland tropical deciduous forest. The late Howard Gentry (an agave specialist) and I went to Chiquilistlán on 30–31 Jan 1975, in search of an agave that Jones had collected at "Salsillo." We inquired in town (83 years after Jones's visit) and were promptly given precise directions to El Saucillo, a long-unused mercury mine about 5 km south and some 2 km west of Chiquilistlán. The locality shown on the map (Fig. 1, no. 7) is another Saucillo, the one accepted by Lenz (1986, p. 374) and by McVaugh (1972, p. 350) as that visited by Jones.

Sayula, Jal.—Five specimens seen, dated 26 or 27 May, except one dated 10 June. Jones came from Guadalajara (presumably by rail) to Sayula on the 25th. He was in Sayula from 25–27 May, assembling an outfit for overland travel to Tapalpa and Chiquilistlán. He stopped briefly in Sayula again, on his way south, 10–11 June, left Sayula for Zapotlán on June 11, a trip of about 25 km to the southeast that occupied about 3 hours. Lenz (1986p. 307) quoted him as saying, "Returning to Sayula I took the stage for Sapotlan which was the terminus of coach travel. Here I outfitted with burros and mules for Colima."

Sierra Mojada Mts., Coah. (often "Sierra Mojada" or "Mojada" only).—About 75 specimens seen, all dated 19 or 20 April except no. 348, "*Giliastrum*," "flowers open at 9 o'clock, a.m. and close at about 4 o'clock, p.m. Sierra Mojada, Mexico, April 18, 1892," and no. 623, "*Greggia*" "Mojada, Mex. 21 April" (POM 95929). Apparently a rich spring flora in a brush-covered desert mountain range with some small trees. Jones seems to have spent most of his time botanizing, having arrived on 18 April and left on the 20th. See Escalón.

Stadden's ranch, Col., see Manzanillo.

Tamazula (de Gordiano), Jal. —No plant collections seen. Jones reached Santa Cruz No. 2 "by night," 13 June, from Zapotlán. He recorded later, "14 Tues. Went to the iron works and to Tamazula. 15 Wed. Spent half a day at Tamazula and went to Tuzpan."

Tapalpa, Jal.—About 25 collections seen, mostly dated either 27 May or 10 June. Jones hired a muleteer and four mules and set out from Sayula for Tapalpa at 6 a.m. on 27 May. Sayula lies at the level of a series of shallow and seasonally dry

lake-beds, and the improved road to the forested mountains around Tapalpa is still very steep and tortuous a century later. Evidently Jones reached Tapalpa by midday. Specimens dated 27 May are presumably from those mountains. The supposed date of No. 133, "*Ximenia parviflora*", was 31 May, perhaps an error for 27 May, as the specimen at MSC is labelled "Tapalpa Mts. 8000 ft among pines." Jones went "in p.m." of the 27th to the nearby rancho of Ferrería [de Tula] [some 12–15 km northeast of Tapalpa] "Saw the good iron works at Ferrería. Slept there." On 10 June Jones left La Palma, reached Tapalpa by noon and Sayula at 9 p.m. On 11 June he left Sayula for Zapotlán. That route does not ascend into the "Tapalpa Mts." so perhaps the date of 11 June on no. 308 ("*Arctostaphylos*") is erroneous.

Tonila, Jal. ("Colima").—About 15 collections seen, dated 8 July except no. 281 (1 July) and a specimen unnumbered (11 July, POM 29489). On the 11th the diary says, "Botanized." Ten of the collections were ferns of the humid foothill woodlands. On 1 July Jones was in or near Colima; he spent the nights of 7–8 July and 10–11 July in Tonila.

Tuxpan ("Tuzpan"), Jal.—About 12 collections seen, all dated 15 June. Plants of the humid woodlands of the foothills. On June 15th Jones "Spent half a day at Tamazula and went [back down the Río Covianes or Tuxpan] to Tuxpan," then on the 16th turned south for ca. 15 km to "Rancho Higuero" [La Higuera], where he visited the Muerto mine. On 12 July, making for the eastern slopes of the active volcano from Tonila, he must have climbed more nearly north, thus to the west of Tuxpan.

Vasques (?Vázquez) mines, and Hacienda. See Chiquilistlán.

Volcano of Colima, Jal. ("Volcan, Mex."; "Volcan").—About 85 collections seen, all dated either 13 July or 14 July. This was the most interesting botanizing that Jones did during this summer. He was the first to make a significant collection there (C. G. Pringle, the renowned collector of Mexican plants, spent several days on the volcanoes in May, 1893). Jones spent the night of July 10–11 in Tonila. On the 11th, according to his diary, "Tried to get outfit to start for the Volcano today but could not. Botanized. Rained hard yesterday and in the night." On the 12th he "Left Tonila at 4 o'clock a.m. for the Volcano. Traveled till 12 o'clock and then was about 1 mile from base of volcano but above it. 9250° alt ± Deep barranca between. Guide & I went over to Volcano & back in 4 hours" (and camped upon their return). Jones seems never to have distinguished between the active volcano (the "Volcán de Fuego") and the much higher peak to the north (the "Volcán de Nieve"), from the side of which the other seems to arise.

On July 13 the diary records, they left after a very cold night at an elevation of perhaps 10,000 feet [an editorial estimate based on Jones's own figure of 9,250]. They broke camp at 7:30 a.m. and ascended to 10,500 feet [perhaps actually 11,000 or more)] "at [the] pass on north side of Nevada [sic] de Colima and descended nearly to base of Mt. [toward Zapotlán] by 5 p.m. Rained for 2 hours. Everything wet on the ground. Camped under a madrona [sic] tree on the grass. Rain eased at 6 p.m. Not cold." Jones did not go into more detail about their route from their first camp, but it was evidently along the eastern flank of the Nevado, an airline distance hardly more

than 15 km, the traveling difficult because of the many *barrancas* radiating down from the peak. Clearly Jones did not seek an easy way. His notations on specimens include such comments as “middle elevations,” “alpine,” or “10,000 ft.,” and there are many plants from the high bunchgrass association with alders, and the sparsely populated slopes above and near timberline.

Zacatecas, Zac. —About 13 collections seen, 5 dated 23 April (soon after Jones’s arrival from the north by railroad), one dated 4 May, two dated 16 May, and 8 dated 23 June. On the latter date Jones was on his way from Colima to Manzanillo; the plants so dated are in general those of the dry interior uplands (e.g., *Adolphia infesta*, *Reseda luteola*) and perhaps mistakenly dated 23 June instead of 23 April. Jones worked out of Zacatecas for about a month after 23 April, with a short trip to Casualidad and Cerro Potosí, and a longer excursion to Ramos, S. L. P., q.v. and El Carro, Zac., q.v.

Zacoalco (de Torres) (“Sacoalco”), Jal.—Three specimens seen, dated 16 July. Lenz (1986, p. 307) quoted the diary as of “15 June,” “Left Sayula at 5 a.m. Rode all day to Sacoalco. Collected some... Reached Sacoalco at 4 p.m.”

Zapotlán el Rey (“Sapotlan”), Jal.—No specimens seen among those recovered. Jones stopped here over the weekend of 11–13 June, “bargained for an outfit for Colima. Wrote about 12 letters.” He continued to Santa Cruz, q.v., on the 13th. He returned a month later, after collecting on the volcanoes, and spent three hours in Zapotlán on 14 July before leaving for Sayula and Guadalajara.

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The primary framework, from which is it possible to derive so many details of the life and work of Marcus Jones, is the exemplary biography by Lee W. Lenz (Lenz 1986). My well-thumbed copy of this volume, a gift from the author, has been indispensable in the preparation of the present paper, and I thank him for permission to quote from it. The late Lyman Benson helped me many years ago to select pertinent data from Jones’s diary and to secure permission to publish them (McVaugh 1972). George Russell of the United States National Herbarium furnished a list of the specimens from the 1892 collection that had been accessioned at US. To Susan Whitfield I am grateful for her precise and elegant additions to my base map. In recent years I have received answers to questions on taxonomy, nomenclature, and Mexican geography, from many friends, especially from James Henrickson and William R. Anderson, and many favors in editorial matters from Christiane Anderson. A tip of the hat to Tom Daniel for information on little-known localities in Zacatecas and San Luis Potosí. My notes on Marcus Jones could not have been published without the aid of Steve Boyd and the brilliantly executed searches conducted in the Pomona herbarium by Lisa M. Rojas.

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APPENDIX

LIST OF JONES'S NUMBERED PLANT COLLECTIONS, 1892, AS FAR AS THESE ARE KNOWN TO ME, ARRANGED BY LOCALITY AND BY NUMBER UNDER EACH LOCALITY

POM = Herbarium of Pomona College, now a part of RSA (Herbarium of Rancho Santa Ana Botanic Garden); MSC = Herbarium of Michigan State University; NY = Herbarium of New York Botanical Garden; US = U.S. National Herbarium (Smithsonian Institution). The serial numbers on the specimens at POM were not routinely recorded before 2003. Labels are hand-written or typed; the writer is named if known to me. Jones's own rather distinctive script appears on relatively few labels. Determinations and quoted passages are taken directly from the labels unless otherwise stated. Botanical names on the labels seem to vary from mere guesses to the results of careful study, but most of them are unverified.

ARMERÍA, COLIMA

- s.n. *Cyperus ochraceus* [det. O'Neill], 28 June, POM 117761
 60. *Cissus verticillata*, 28 June
 71. *Karwinskia humboldtiana*, 28 June, POM 850111
 156. *Cassia atomaria* (*Senna emar.*), 28 June
 173. *Cassia emarginata* (*Senna*), 28 June
 229. *Samolus valerandi*, 28 June, POM 75862
 337. *Astianthus viminalis*, 28 June
 337a. *Chilopsis linearis*
 474. *Dichromena colorata*, 28 June
 475. *Fimbristylis spadicea*, 28 June, POM
 502. *Acrostichum*, 28 June; "fronds pinnate 6 feet high"
 664. *Cyperus odoratus*, 28 June, POM

CASUALIDAD, ZACATECAS

- s.n. *Dalea argyraea*, 26 Apr, POM 28927
 s.n. *Iresine*, 26 Apr, POM 102564
 16. "*Petalonyx*" [*Mortonia palmeri* or sp] ["low heath like scrub on rocky places"], 26 Apr, POM-2 sheets, US, fide J. Henrickson
 120. "*Rhus*" [spiny shrub], 26 Apr, POM 86044
 146. *Phaca zacatecana*, 26 Apr, NY, holotype
 196. *Mimosa biuncifera* [typed: "Low and rigidly branched shrub"], 29 Apr, POM 26684, POM 28440
 248. *Cylindropuntia* [typed: "6 inches high in tufts among the rocks. Looks like white balls at a distance 7000 feet alt"], 28 Apr, POM 83297

CASUALIDAD, ZACATECAS (cont.)

398. *Lobelia laxiflora* var. *angustifolia*, 26 Apr, POM 67869

541. *Notholaena ferruginea*, 28 Apr

CHIQUILISTLÁN, JAL.

s.n. *Vernonia viarum* ["type" scrips. Jones], 30 May, POM A1774 (?); det. *V. deppeana* by B. L. Rob. & Blake

s.n. *Quercus polymorpha*, 28 May, POM 106185

s.n. *Psidium guajava* ["Lead Mine"], 28 May, POM 117688

s.n. *Calliandra*, 28 May, POM 28244

s.n. *Lysiloma acapulcense*, 28 May, POM 28622

s.n. *Comarostaphylis glaucescens*, 28 May, POM 77302

s.n. *Crotalaria*, 28 May, POM 29583

s.n. *Albizia lebbek* ["lead mine, near C"], 30 May, POM 28586

s.n. *Acacia farnesiana*, 31 May, POM 29478

s.n. *Acacia*, 28 May, POM 28436

s.n. *Agave*, 1 June, POM 109141

s.n. *Polypodium thysanolepis*, 28 May, POM 120081

s.n. *Baccharis* (*Archib...*?), 28 May, POM 37322

s.n. *Asclepias jaliscana*, 28 May

36. *Loranthus calyculatus* [typed: "Tree 60 feet high, called Tacamo, 2 feet diameter"], 2 June, POM 105967

39. *Bursera* ["at lead mine"], 30 May, POM 86495

40. *Pistacia mexicana* ["medium sized shrub"], 30 May, POM 86498

64. *Annona* [?84; label illegible], POM 70301

70. *Karwinskia rzedowskii*, 19 May, POM 86213; presumed duplicate, POM 85400

74. "?*Erythroxylon*," 28 May, POM 86507

78. ??, 2 June, MSC

80. *Guazuma ulmifolia*

180. *Erythrina leptorhiza* [det. Krukoff 1969], 28 May, POM 29007

181. *Lysiloma acapulcense*, 28 May; scrips. Jones exc. name, POM 29008; same, typed label, POM 28444

187. *Pithecellobium tomentosum* ["at lead mine"], 30 May, POM 28215; scrips Jones exc. name, POM 29012

207. *Mimosa albida*, 13 May, POM 28585, POM 26592

208. *Acacia pennatula*, 28 May; scrips. Jones, POM 27060

288. *Vernonia viarum* ["type"], 30 May]

301. *Vaccinium stenophyllum*, 28 May, POM 77175

302. *Comostaphyllis glaucescens* [scrips. Jones], 28 May, POM 77454

303. *Arctostaphylos pungens*, 28 May, POM 77300

317. *Asclepias mexicana*, 28 May; scrips. Jones, POM 75501; also *A. jaliscana*, scrips. Munz, POM 76070

335. *Stemmadenia tomentosa*, 15 May; typed, POM 76969; scrips. Jones, POM 75444

350. *Plumeria*, 30 May, POM 76811, POM 75443

378. *Dyschoriste mcvaughii* ["type" (paratype)], 28 May, POM 69546

386. *Hyptis albida*, 30 May, POM 70124

420. *Euphorbia radians*, [*E. strigosa* ex V. W. Steinmann] 28 May, POM 85475

436. *Quercus* [stam. fls.], 28 May, POM 106180

440. *Quercus crenatifolia* [*Q. polymorpha* ex C. H. Muller], 28 May, POM 106179

441. *Quercus magnoliaefolia*, 28 May, POM 106209

442. *Quercus magnoliaefolia* ["Lead mine"], 30 May, POM 106182

CHIQUILISTLÁN, JAL. (cont.)

- 443. *Quercus*
- 444. *Quercus magnoliaefolia*, 28 May, POM 106208
- 445. *Quercus serrulata* [type], 28 May, POM 106181
- 446. *Quercus jonesii* [type; long typed description], 28 May, POM 106272
- 447. *Yucca valida* Brandg. [*Y. cf. schottii*], 1 June, POM 109484
- 449. *Agave ?pedunculifera*, 31 May
- 489. *Pinus*, 28 May
- 492. *Pinus* (?*lumholtzii*), 28 May
- 502. *Acrostichum aureum*, 31 May
- 508. *Polypodium* [long entire lvs], 28 May
- 517. *Gymnogramme*, 28 May
- 709. *Tillandsia fasciculata* [det. L. B. Smith], 30 May
- 710. *Cereus*, 30 May, POM 83283
- 712. (?*Verbenac.*), 28 May

COLIMA, COLIMA

- s.n. *Ludwigia octovalvis*, 30 June, POM 46276
- s.n. "*Euonymus*" (*Acalypha coryloides*), 2 July, POM 84506
- 11. *Mascagnia macroptera*, 2 July; ["Cherry-like shrub, open branched, branches small and long"] POM 84245; [*Malpighia*] MSC
- 23. *Phyllanthus mocinianus*, 5 July
- 23. *Phyllanthus* [typed: "Delicate and very graceful shrub or small tree 10–12 feet high, grows on (3 words illegible) Valleys"], 5 July, POM 85602
- 23. *Phyllanthus orbiculatus* Muell. [typed, except binomial], 5 July, POM 86554 (same sp. as POM 85602, larger specimen); "Delicate and very graceful shrub or small tree 10–12 feet high, grows on rocky debris in valleys"
- 24. *Sapranthus violaceus* [det. Schatz], 2 July, POM 117207
- 72. *Samyda mexicana*, 2 July
- 73. "*Bursera reflexa* Rose & Jones" ["type" of *B. jonesii*], 2 July, POM 86504
- 79. "*Celtis*" (*Croton*), 2 July, POM 106097
- 84. "*Celtis*" (*Croton*), 5 July, POM 106095; [typed:] "Weak shrub, 10–20 feet high, branches slender"
- 103. *Podopterus cordifolius*, 25 June
- 118. *Oxalis latifolia*, 2 July
- 118. *Oxalis* ["deeply cut halves of lfts"], 2 July, POM 86753
- 127. *Manihot michaelis* [label typed], 2 July, POM 85423; "Elder-like shrub or small tree"
- 154. *Phyllanthus mocinianus*, 2 July
- 154. *Phyllanthus* [2 sheets; "same as 23"], 2 July, POM 86557, POM 85604
- 166. *Tamarindus indica*, 30 June, MSC; POM 29680; "same as 165?"
- 168. *Caesalpinia coriaria*, 2 July, MSC; POM 28651 [see same description under *Jay-amita*]
- 174. *Caesalpinia platyloba*, 2 July, MSC
- 174. *Caesalpinia* [scrips. Jones], [typed] 2 July, POM 28332; "Small tree with open branches. Flowers smell like carrion"
- 175. *Cassia emarginata* "*Senna*," 2 July
- 177. *Diphyssa* [typed], 2 July, POM 28996; "Small tree like the locust"
- 177. *Oenothera rosea* [scrips. Jones exc. name], 2 July, POM 37766
- 178. *Cassia pringlei* ("*Senna wiz.*") [typed], 2 July, POM 27296; "Very slender vine-like shrub with pendent branches, 4–30 feet high"

COLIMA, COLIMA (cont.)

185. *Pithecellobium tortum*, 5 July, POM 29013; scrips. Jones exc. name
 185. "*Calliandra*" ("*Zapoteca*"), 5 July, POM 28218; typed: "Very graceful small tree"
 186. ?*Calliandra tetraphylla*, 2 July, POM 28219
 196. *Calliandra* [scrips. ?P. A. Munz], 2 July, POM 26683
 327. *Tournefortia* [scrips. Jones], 2 July, POM 71465
 327. same *Tournefortia* [scrips. ?Munz], 2 July, POM 72282; "open and almost pendent branched shrub with short branches"
 351. *Plumeria*, 2 July, POM 76813
 375. *Malachra capitata*, 30 June, POM 83706G
 467. *Tradescantia orchidophylla*, 5 July; "below Colima"
 471. *Commelina erecta*, 30 June
 668. *Passiflora colimensis*, 30 June, POM 84401
 672. *Lonchocarpus lanceolatus* [det. Mario Sousa], 2 July, POM 28990
 674. *Rhus* (?*Bursera*), 2 July

COVISON (MINE), SAN LUIS POTOSÍ

246. *Ferocactus latispinus* [det. G. Lindsay], 30 Apr, POM 83294 (long typed description); Covison was the name of a mine in the vicinity of La Paz, q.v.; see also Ojo Caliente]

CUVIANES, JALISCO (Cavianes, Covianes, Cuvianus), Río

- s.n. *Mecardonia vandellioides*, 13 June, POM 4598
 s.n. *Oenothera kunthiana*, 13 June, POM 38611
 s.n. *Dysodia*, 13 June, POM 67158
 s.n. *Chamaesyce hyssopifolia*, 13 June, POM 85515
 s.n. *Heliotropium indicum*, 13 June, POM 72279
 s.n. (or 357). *Echinochloa*, 13 June, POM 116121
 142. [legume; label typed], 13 June, POM 26796; "Flowers yellow and beak very long"
 155. *Cassia occidentalis* (*Senna*) [scrips. Jones exc. name], 13 June, POM 26674; scrips. ?Munz, POM 28643; typed label, POM 28642,
 170. *Cassia tora* (*Senna obtus.*), 13 June, POM 26680 (older specimen POM 29585)
 200. *Rhynchosia* [all typed], 13 June, POM 29290
 209. *Cologania* [narrow lvd], 13 June
 210. *Rhynchospora minima*, 13 June; see 200
 272. "*Dysodia*," 13 June, POM 67154
 315. *Asclepias curassavica*, 13 June, POM 76033
 329. *Heliotropium*, 13 June, POM 72278
 423. *Chamaesyce hirta*, US; "Rio Cuvianes near SantaCruz"
 423. *Euphorbia pilulifera* [scrips. Jones], 13 June, POM 85603
 423. *Chamaesyce hirta* [det. Burch], 13 June, POM 86211
 443. *Bidens odorata* ["Rio Cuvianes Tuxpan," scrips. Jones], 13 June
 546. *Apium leptophyllum*, 13 June
 641. *Conyza sophiaefolia* [det. S. F. Blake], 13 June
 645. *Asclepias glaucescens*, 13 June
 646. *Merremia quinquefolia*, 13 June, POM 71010
 648. *Cuphea* ["Rio Cuvianus"], 13 June, POM 70320
 652. *Eragrostis mex.* (*tephrosanthes*), 13 June

FERRERÍA, [DE TULA], JALISCO

- s.n. *Mecardonia vandelloides*, 28 May, POM 45099
 s.n. *Oxalis drummondii*, 28 May, POM 86765
 s.n. *Arracia tapalpa* ["F. de Tula"], 28 May; "Tapalpa Mountain"
 s.n. *Symphoricarpos microphyllus*, 28 May, POM 67589
 s.n. *Arbutus* (hairy), 28 May, POM 77221
 69. *Rhamnus mucronata*
 112. *Phacelia madrese*, 28 May, POM 73727
 200. *Comarostaphyllis discolor*, 27 May, POM 77174
 230. *Cornus excelsa* [scrips Jones], 28 May, POM 77743; typed labels, POM 77933, POM 77934
 238. *Arracacia tapalpa* Jones ["type," scrips. Jones], 28 May, POM 82990
 303. *Arctostaphylos pungens*, 28 May, POM 77247
 401. *Cuphea llavea*
 401. *Azolla*, 28 May, POM 119141
 409. *Polygonum punctatum*, 28 May, POM 103387
 437. *Salix jaliscana* type-no. (= *S. laevigata* Bebb ex C. R. Ball & Argus)], 28 May, POM 107135
 439a. ?*Alnus pringlei*, 28 May
 455. ?*Zephyranthes fosteri*, 28 May, US
 468a. *Smilax*, 28 May
 481. *Aegopogon tenellus*
 497a. *Adiantum thalictroides*, 28 May, POM
 540. *Bommeria pedata*, 28 May, POM
 704. *Arbutus* (hairy), 28 May, POM 77166
 706. *Ranunculus petiolaris*, 28 May, POM 100542

GUERRO (or QUERRO), "Colima," 15 June; see Higuera, Jal.

HIGUERA, [LA], JALISCO.—Almost due east of San Marcos. and about equidistant from the Río Covianes and San Marcos.

8. *Conostegia xalapensis* ["Rancho Guerro"], 15 June, POM 77167; "Open branched shrub 15 to 20 feet tall"
 306. "*Arbutus*" *Brysonima* ["Rancho Guerro"], 15 June, POM 77218; dupl. scrips. ?Munz, POM 77217
 309. "*Arbutus*" *Byrsonima crassifolia*, 15 June, POM 77219
 423. *Cladocolea oligantha* ["Rancho Guerro"], US
 443. "*E[uphorbia] peganoides*," 15 June, POM 85784; script unknown, "Ranono Querro"; probably intended for "Rancho Guerro," which is [La] Higuera

JAYAMITA, COLIMA

83. *Acalypha filipes*, 1 July
 83. "*Euonymus*" (*Acalypha coryloides*), 1 July, POM 84508; "Jayamita, Jalisco"
 164. *Caesalpinia sclerocarpa*, 1 July, (2nd sheet, POM 28652)
 168. *Caesalpinia coriaria* [label typed], 1 July, POM 26670; also two fragments on POM 26670. The sheet with 2nd label hand-written, not by Jones: Locality "Colima, Mex.," 2 July; "Called 'Gall tree' pod used to tan hides. Locust-like tree - 10-30' high"

LA PALMA, JALISCO

- s.n. *Dyschoriste mcvaughii* ["paratype"; scrips. Munz], 7 June
s.n. "*Waltheria americana*," 7 June, POM 84125
s.n. "*Heteropteris laurifolia*" ["Shrub 6–20 ft, half climbing, along streams"], 9 June, POM 77542
s.n. *Hymenocallis jaliscensis* Jones, 9 June, POM 119360
s.n. *Marina diffusa*, 7 June, POM 27674
s.n. "*Crotalaria*," 7 June, POM 27424
s.n. "*Arenaria*," 9 June, POM 101142
s.n. *Dryopteris patens*, 7 June, POM 121220
s.n. *Polypodium incanum*, 8 June, POM 120084
s.n. *Polypodium* (*Blechnum*), 8 June, POM 121074
s.n. *Asplenium fragrans*, 9 June, POM 120860
s.n. *Gymnogramme* (*Pityro-*), 8 June, POM 121281
s.n. *Adiantum*, 9 June, POM 120312
s.n. *Bommeria* (*Gymnogramme*), 9 June, POM 121274
2. *Ardisia revoluta* [scrips. Jones exc. name; det. Thorne], 7 June, POM 77453; duplicate with typed label, POM 89333
7. *Piper leucophyllum* [scrips. Jones exc. name; det. Thorne], 7 June, POM 86793; duplicate with typed label, "Shrub 10 feet high," POM 86773
19. *Heteropterys floribunda* [typed: "Small shrub, 6 to 20 feet or more high, half climbing. Stems 1–3 in. diam."], 9 June, POM 84733
33. *Ficus jonesii* [isotype (= *F. glaucescens*)], 7 June; scrips. Jones exc. name, POM 86291; typed label: POM 86883; "A very large tree, with the general appearance and habit of the mahogany (caoba) or *Gleditschia triacanthos* many ash trees"
43. *Bursera* [typed], 9 June, POM 86502; "Shrub, 3–10 feet high, like *Corylus rostrata* in habit"
48. *Jarilla heterophylla*, 9 June
56. *Iresine* [typed description], 8 June, POM 102563; "also at Chiquilistlan"
59. *Dorstenia Drakaena* [typed], 7 June, POM 86475; "Root 1–2 in long, with light-red rootlets from its entire length but the strongest are from the end. rootstock erect. Grows in the shade"
66. *Rauwolfia heterophylla*, 7 June, POM 75820
85. *Thalictrum*, 9 June, POM 100098; [typed] "Root leaves (?round red) almost entire, 1 in diam."
87. *Pinguicula oblongiloba*, 9 June, POM 85804
110. *Sida rhombifolia*, 9 June, POM 84029
116. *Oxalis*, 9 June, POM 86748
117. *Ionoxalis macrocarpa* ["type"], 9 June, US
117. *Oxalis* [all typed], 9 June, POM 86751; "Pods linear, acute inch long, Seeds chestnut colored, a line long, oval, acute at each end, longitudinally grooved and deeply cross-pitted"
131. (?731) *Macrosiphonia hypoleuca*, 7 June
153. *Coriaria thymifolia* "*ruscifolia*," 8 June, POM 28641, POM 28640
183. *Inga spuria* [typed], 9 June, POM 28216; scrips. in unknown hand: "Large tree like *Juglans nigra*, but spreads very widely like the apple, 30–40 feet high, bark like the black oak but soft"
211. *Cologania procumbens*, 9 June

LA PALMA, JALISCO (cont.)

237. *Valeriana densiflora*
380. *Salvia palmae* ["type" ex Epling (not located at US)], 9 June, POM 76691
387. *Pedicularis jonesii* ["type"], 9 June
416. *Acalypha*, 9 June, POM 87101
417. same *Acalypha* (?) ["narrow leaves"], 9 June, POM 86792
417. *Acalypha multispicata*
433. *Euphorbia hypericifolia* [2 copies], 9 June, POM 86288
433. *Chamaesyce nutans*, US (not seen)
434. *Chamaesyce hirta* [cf var. *nocens* ex V. W. Steinmann], 9 June, POM 86253
457. *Bessera elegans*, 9 June
460. *Polianthes*, 9 June
462. *Encyclia pterocarpum*, POM
464. *Encyclia aenicta*, 9 June
465. *Spiranthes lanceolata*, 9 June, POM
466. *Pitcairnia ?palmeri*, 7 June
467b. *Adiantum capillus-veneris*
472. *Sisyrinchium*, 9 June
473. *Tigridia* or *Nemastylis*, 9 June
477. *Fimbristylis pentastachya*, 9 June
484. *Selaginella pallescens*, 9 June
497. *Adiantum thalictroides*, 9 June
497b. *Adiantum thalictroides*, 7 June, POM
509. *Polypodium angustum*, 8 June, POM
533. *Notholaena galeottii*, 7 June
735. *Stachys coccinea*, 8 June, POM 80030
739. "*Desmanthus*" "*Zapoteca*," 8 June, POM 29494
741. *Cyperus brevifolius*, 9 June
741. *Hexadesmia ?crucigera*, 9 June
743. *Pleurothallis ciliaris*, 9 June
744. *Bletia macrithmochila*, 9 June
746. *Cuphea*, 9 June, POM 69540
751. *Ranculus petiolaris*, 9 June, POM 99304

MANZANILLO, COLIMA

- s.n. *Mimosa pigra*, 25 June, POM 28628; typed: "Shrub, 6–20 feet high, intricately and openly branched"
s.n. *Agave colimana* Gentry [det. McV 1977], June, POM 109143
5. *Coccoloba sessiliiflora* ["Small tree" typed], 25 June, POM 28998
9. *Capparis*, 25 June, MSC
13. *Stegnosperma halimifolium*, 25 June, MSC
15. *Laguncularia racemosa*, 25 June
32. "Malpighiaceae" (but lvs alternate) [typed, "Fig"], 25 June, POM 84025
100. (typed, inked over to 200) "*Acacia*" "*Prosopis*" "Called mesquit," 25 June, POM 28630
103. *Podopterus cordifolia* Rose & Standl. [isotype], 25 June, POM 86552
141. *Indigofera suffruticosa* [typed label], 25 June, POM 28019; "Bush 6 feet high, very open branches long, erect"
141. "*Indigofera anil*" [scrips. Jones exc. name], 26 June, POM 26676
167. *Caesalpinia eriostachys* [name scrips. Jones, label otherwise typed], 25 June, POM 28333

MANZANILLO, COLIMA (cont.)

179. *Crataeva tapia* [det. Iltis], 25 June, POM 84247
 189. *Acacia hindsii*, 25 June, scrips. Jones exc. name, POM 29014; typed label, POM 28623; "These spines are the product of a most pugnacious and venomous little ant, each spine being an ant colony. Normally the spines are 12 lines long and a line wide and little inflated,"
 193. *Mimosa laxiflora* var. *zygoph.*, 25 June
 201. *Mimosa pigra*, 25 June
 201. *Mimosa rosei* [det. Barneby], 25 June, POM 28629
 231. *Ludwigia leptocarpa* ["Prostrate. Fls yellow"], 30 June, POM
 271. "*Dysodia*" (?*Pectis*), 25 June; POM 67061
 432. *Chamaesyce thymifolia*
 438. *Combretum laxum* ["mexicanum"], 25 June, POM 83660
 452. ?*Agave geminiflora* ["on rocks touched by sea spray"], June
 543. *Caesalpinia crista*, 25 June

MILAGROS, ZACATECAS (Milleagres, Milleagros)

249. *Opuntia*, 4 May, POM 83298
 252. *Opuntia*, no date, POM 83214

MOJADA, MOJADA MTS., see Sierra Mojada.

OJO CALIENTE, ZACATECAS

- s.n. *Argemone ochroleuca* [det. Ownbey], 9 May, POM 97756; probable duplicate of POM 97754, Jones 86
 s.n. *Oenothera kunthiana*, 9 May, POM 38610
 s.n. *Teucrium cubense* [det. McClintock], 9 May, POM 69566
 s.n. *Tragia ramosa*, 9 May, POM 86342
 s.n. *Chenopodium glaucum*, 9 May, POM 103294
 s.n. [*Astragalus*] *hypoleucus*, 9 May, POM 45804
 s.n. *Baccharis pteronioides*, 9 May, POM 41767
 86. *Argemone ochroleuca*, 9 May, POM 97754, 97755
 113. *Oxalis albicans*, 9 May, POM 86782
 151. *Lotus puberulus*, 9 May, POM 27893
 158. *Dalea bicolor*, 9 May, POM 26675, POM 28928
 264. *Aphanostephus humilis* [det. Blake], 9 May, POM 34082
 312. *Asclepias brachystephana*, 9 May, POM 75830
 382. *Loeselia coerulea*, 9 May, POM 74891
 397. *Lobelia laxiflora* var. *angustifolia*, 9 May, POM 68364; "Flowers yellow"
 406. *Chenopodium inamoenum* [det. Wahl], 9 May, POM 103297
 413. *Croton*, 9 May, POM 86734
 415. *Acalypha monostachya*, 9 May, POM 86730; see also no. 415 under Tuzpan, Jal.
 428. *Euphorbia stictospora*, 9 May, POM 86134
 550. *Atriplex muricata*, 9 May, POM 102886
 552. *Nama undulatum*, 9 May, POM 73691
 553. *Plantago*, 9 May
 557. *Aphanostephus humilis*, 9 May
 558. "mixture of *Bahia* etc," 9 May
 559. *Aphanostephus humilis*, 9 May
 562. *Gaura coccinea* [det. Raven], 9 May, POM 46360
 565. *Sida abutifolia* [det. P. Fryxell], 9 May, POM 85186

OJO CALIENTE, ZACATECAS (cont.)

566. *Drymaria*, 9 May, POM 117068567. *Lepidium oblongum*, 9 May, POM 94074587. "*Acacia constricta*" (= ?*Mimosa*), 30 Apr, POM 28438

PASTORILLA (PASTORÍA), ZACATECAS

s.n. [*Astragalus*] *hypoleucus*, 2 May, POM 45799228. *Ludwigia tepicana* ["type"], 2 May228. *Heimia salicifolia*; label typed, POM 38095; smaller duplicate, scrips. Jones exc. name, POM 83688316. *Asclepias longicornu*, 7 May, POM 75835385. *Buddleia sessiliflora* [det. Norman], 2 May, POM 76626425. ?*Jatropha*, 2 May, POM 85644568. *Asclepias exilis* [type ex Munz], 2 May, POM 76066

PIHUAMO, MICHOACÁN

s.n. *Castillea nervata* Eastw., 16 June, POM 69367s.n. *Bacopa vandellioides*, 16 June, POM 45100s.n. *Bouvardia*, 16 June, POM 67585s.n. *Ludwigia octovalvis*, 16 June, POM 46277s.n. *Drymonia* (A, B, D & indet.), 16 June, POM 69020s.n. *Tillandsia*, 16 June, POM 109082s.n. ?*Thevetia*, 16 June, POM 773926. *Dioscorea mitis*, 16 June18. *Calypttranthes pallens*51. *Dioscorea*, 20 June; "vine like the grape and very tall, going to the top of tall trees"61. *Cissus verticillata*, 16 June68. "*Cordia*," 20 June, POM, US68. "*Rauwolfia heterophylla*," 20 June, POM 86471163. *Pithecellobium dulce*, 16 June163. "*Cassia*" [*Machaerium salvadorensis* ex Rudd 1973], 16 June, POM 29587171. *Cologania*, 16 June171. Mixed "*Cassia*," *Crotalaria*, *Eriosema*, 16 June, POM 29582214. *Brongniartia inconstans*, 20 June307. *Ardisia compressa*, 16 June, POM 76404435. *Euphorbia hypericifolia*, 16 June, POM 86285461. *Epidendrum ciliare*, 16 June, POM498. *Adiantum thalictroides*, 16 June, POM501. *Adiantum trapeziforme*504. "*Blechnum*," 16 June511. *Polypodium incanum*, 16 June514. *Pityrogramma calomelanos*, 16 June527. *Asplenium*, 16 June528. *Blechnum occidentale*, 16 June680. *Heliotropium*, 16 June, POM 72288683. *Calathea atropurpurea* [det. H. Kennedy], 16 June

RAMOS, ZACATECAS

- s.n. "*Teucrium*," 5 May, POM 60044
 s.n. *Baccharis pteronoides*, 5 May, POM 37528
 s.n. *Astragalus racemosus* var. *brev*, 5 May
 17. "*Lycium*" *Condalia ericoides*, 6 May, POM 114062, POM 84571
 150. *Astragalus racemosus* var. [scrips. Jones], 5 May, POM 45764
 373a. *Teucrium laciniatum* [scrips. Jones exc. name], 5 May, POM 70294
 373a. *Teucrium cubense* [det. McClintock], 5 May, POM 69548
 451. "*Yucca*," 5 May, fragm., POM, 2 specimens

SACOALCO, JALISCO (Zacoalco de Torres)

27. *Malpighia cordata* Small, 16 July, POM 86503; "Isotype"; original label typed, number clearly 27, as recorded by F. K. Meyer (JE)
 37. *Malpighia cordata* Small, 16 July, POM 84576; evidently a duplicate of POM 86503, original number clearly typed 37, but interpreted by F. K. Meyer (JE) as 27
 58. *Iresine*, 16 July, POM 102565
 199. *Mimosa monancistra*, 16 July, POM 28442
 213. *Pachyrrhizus* [scrips. Jones exc. name], 16 July, POM 27059; duplicate label typed, POM 28553; "Leaves entire to 5-toothed or 5-lobed on the same plant"
 217. *Gronovia scandens* [typed], 16 July, POM 68269; "Plant is an annual"
 319. *Philibertia pavonii*, 16 July, POM 76073; "woody vine 4 feet high"
 352. *Thevetia* [scrips. Jones], 17 July, POM 75412
 519. *Sarcostemma pannosum*, 16 July; all scripsit Jones; not 319 as reported
 575. *Enslenia*, 16 July
 576. *Cleome chapalensis* ["1st coll."], 16 July, POM 93793
 577. *Ruellia*, 16 July

SALCILLO, JALISCO (Salsillo)

- s.n. *Oxalis drummondii*, 1 June, POM 86750
 s.n. *Allionia*, 1 June, POM 117271
 s.n. *Pellaea*, 2 June, POM 120738
 s. n. ?family, 1 June, POM 100423
 s.n. *Tauschia nudicaulis* [det. L. Constance 1981], 1 June
 s.n. *Calliandra*, 1 June, POM 28242
 s.n. *Euphorbia eriantha* ?, 1 June, POM 85474
 20. *Galphimia glauca* [typed: "Shrub 8 feet high, like the lilac in habit"], 1 June, POM 84513
 25. *Aralia* ["like elder, a bush"], 1 June, POM 77826
 41. *Bursera* [typed: "Very much branched, apple-tree-like shrub 10 feet high. Grows on rocks"], 1 June, POM 86499
 41. *Bursera* [scrips. Jones exc. name], 1 June, POM 117126; same species as POM 86499
 106. *Vitis tiliifolia* ["Salc[illo], along the creek"], 1 June
 182. *Calliandra (bella) anomala*, 1 June, POM 28241; POM 29009; typed: "Broom-like shrub stems not branched, 4–8 feet high. Flowers purple, a very handsome plant"
 257. *Opuntia icterica* [det. Scheinvar], 1 June, POM 83415
 399. *Cuphea llavea*, 1 June, POM 69219; "Also San Marcos, Santa Cruz"

SALCILLO, JALISCO (Salsillo) (cont.)

419. *Colubrina ehrenbergii*, 1 June, POM; "on rocks on hillsides"
 448. *Agave* (fls.), 1 June
 451. "*Yucca*," 1 June, POM
 456. *Weldenia candida*, 1 June; "open places near streams"
 458. *Hymenocallis jaliscensis*, 1 June; "type," POM 119358; s.n. "9 June," POM 119369
 497b. *Adiantum thalictroides*, 1 June, POM
 517. *Pityrogramme* ("*Gymnogramme*"), 1 June
 756. indet. fragm, 1 June, POM 86491

SALINAS, ZACATECAS

247. *Opuntia*, 4 May, POM 83296
 286. Compositae (no name), 4 May, POM 66854
 573. *Opuntia* ["Camp Silvio"], 4 May, POM 83285

SAN MARCOS, JALISCO ("Colima," sensu Jones)

- s.n. *Richardia*, 21 June, POM 69258
 s.n. *Castilleja nervata* Eastw., 21 June, POM 69309
 s.n. "*Cuphea llavea*," 21 June, POM 69220
 s.n. *Pitcairnia*, 21 June, POM 109081
 s.n. *Polypodium thysanolepis*, 21 June, POM 120082
 s.n. *Polypodium* (*Blechnum*), 21 June, POM 121073
 s.n. *Pteris*, 21 June, POM 120248
 215. *Crotalaria*, 21 June, POM 27425, POM 27426
 486. *Selaginella* "*delicatissima*," 21 June
 497a. *Adiantum thalictroides*, 21 June
 499. *Adiantum concinnum*, 21 June
 503. *Aspidium trifoliatum*, 21 June
 512. *Pteris longifolia*, 21 June, POM 120249
 512. *Polypodium*, 21 June, POM 12107
 513a. *Pityrogramma tartarea* var. *fallax* Domin [lectotype ex Morton 1969], 21 June, POM 121273
 513. *Pityrogramma tartarea*, 21 June
 515. *Pityrogramma dealbata*, 21 June
 516. *Notholaena candida*, 21 June
 529. *Thelypteris puberula*, 21 June
 666. *Cyperus odoratus*, 21 June

SAN MIGUEL, ZACATECAS

- s.n. "*Petunia*" ["Lake near San Miguel"], 6 May, POM 69341
 s.n. *Oenothera rosea*, 6 May, POM 38420
 s.n. *Astragalus triflorus* [Lake, near San Miguel], 6 May, POM 25896
 s.n. *Oenothera rosea* ["Lake Ness (?near) San Miguel"], 6 May, POM 38421
 s.n. *Aster* [Lake near San Miguel], 6 May, POM 39500
 s.n. *Apium depressum* ["type," scrips. Jones], 6 May, POM 82793
 147. *A[stragalus] nuttallianus*, 6 May, ["not sent"] POM 45900
 157. *Marsilia minuta* (*vestita*), 6 May, POM 67721; "near San Miguel. Margin of brackish lake, in small mats in the ground"
 234. *Oenothera rosea* [typed; no date], POM 38419; "Borders of a lake near San Miguel. This is a perennial, blooming the first year"

373. *Teucrium cubense*, 6 May, POM 69549; "Lake near San Miguel"
 588. "*Coldenia*" *Nama undulatum*, 16 May [sic], POM 69355; "Lake near San Miguel"
 592. [*Astragalus*] *hypoleucus*, 6 May, POM 45797; "Lake near San Miguel"

SANTA CRUZ, JALISCO

- s.n. "*Colubrina*" or "*Ziziphus*," 6 June, POM 86568
 s.n. ?*Guazuma*, 3 June, POM 86469
 s.n. "probably *Mecardonia*," 6 June, POM 43626
 s.n. "*Cassia*" *Pithecellobium dulce*," 4 June, POM 29584
 s.n. *Quercus polymorpha* [det. C. H. Muller], 3 June, POM 106184
 s.n. *Cuphea llavea*, 3 June, POM 69221
 s.n. *Notholaena candida*, 4 June, POM 120436
 s.n. *Encyclia lancifolia*, 4 June, POM 114044
 s.n. ?*Iresine*, 4 June, POM 102566
 s.n. *Brongniartia* ("*Cassia*"), 4 June, POM 29590
 s.n. *Enterolobium* ("*Acacia*"), 6 June, POM 28632; fruit
 s.n. *Enterolobium* ("*Acacia*"), 6 June, POM 28632; leafy branch
 s.n. "*Cassia*" (not that), 6 June, POM 29580
 s.n. *Asclepias curassavica* [det. R. E. Woodson], 3 June, POM 75838
 728. "*Evolvulus*" (?*Turnera*), 14 June
 s.n. *Asclepias senecionifolia*, 14 June
 s.n. *Asclepias senecionifolia* [scrips. Munz], 14 June, POM 76072
 s.n. *Asclepias senecionifolia*, 14 June
 22. *Stillingia zelayensis*
 28. *Psidium* [typed; "Called Guayava. Small tree"], 3 June, POM 117310
 45. *Bursera* [typed], 4 June, POM 86497; "Called copal. Tree 40 feet high with bark of paper birch red open branches a very graceful tree, with much varnish like gum"
 50. *Cissampelos* ["Pistillate of 49 ?"], 4 June, POM 100402
 67. *Agonandra racemosa* ("*Prunus*"), 7 June, POM 89339
 82. *Ziziphus amole*, 6 June
 115. *Oxalis drummondii* [typed; "Same as 114?"; 114 is from the Volcano of Colima], 7 June, POM 86766
 132. *Casearia* ("*Prunus*"), 3 June, POM 89335; "Apple like tree, very open, called "Cerhuela" or plum. Fruit delicious"
 144. *Brongniartia vicioides* ?, 4 June, POM 27280; "Low and suffrutescent"
 162. *Cassia emarginata* (*Senna*), 4 June
 165. *Tamarindus indica* [typed], 7 June, POM 29681; "Tamarind, 50 feet high, very widely spreading, bark like the locust"
 184. *Pithecellobium acatlense* [typed], 4 June, POM 28217; duplicate no., scrips. Jones exc. name, POM 29010; "Shrub 10 ft. high"
 190. *Pithecellobium tomentosum*, 6 June
 192. *Pithecellobium tomentosum*, 4 June, US
 192. *Acacia macilenta*, 4 June
 202. *Enterolobium cyclocarpum*, 6 June
 206. *Mimosa albida* [106 typed, inked 206], 4 June, POM 83717; mixture of Leguminosae, Malpighiaceae, Rubiaceae
 212. *Cologania*, 7 June
 226. (?*Struthanthus*), 6 June, POM 67579
 377. *Salvia sessei* [det. Epling], 3 June, POM 70187
 377. *Buddleja* ?*floccosa*, 3 June

SANTA CRUZ, JALISCO (cont.)

379. *Waltheria indica*, 7 June
412. *Croton ciliatogland.*, 3 June, POM 87132
422a. *Chamaesyce hirta*, 6 June, POM 86240; "Sta Cruz SW of Chiquilistlan"
*423. *Chamaesyce hirta*, US
459. *Sprekelia formosissima*, 7 June
475. *Fimbristylis spadicea*, ?4 June
724. (?Verbenaceae), 6 June
726. "*Iresine*," 4 June
728. "*Evolvulus*" (?*Turnera*), 14 June

SANTA CRUZ NO 2, JALISCO

- s.n. *Castilleja*, 14 June, POM 69365
s.n. *Cuphea llavea*, 14 June, POM 69218
2. "*Cassia*" (= *Aeschynomene*), 14 June, POM 29488
47. *Ludwigia peploides* [typed], 14 June, POM 38135; "Spreads by rooting, in wet place"
346. cf. *Evolvulus*, 10 June, POM 71166

SANTA ROSALÍA, ZACATECAS

614. *Nama hispidum (spathulatum)*, 15 May, POM 73490

SAYULA, JALISCO

- s.n. ?*Thevetia*, 26 May
291. *Baccharis heterophylla* [scrips. Jones exc. name], 27 May, POM 40306
291. *Baccharis heterophylla*, 27 May, POM 37323
354. *Passiflora foetida*, 26 May, POM 84176
570. *Phoradendron carneum*, 26 May

SIERRA MOJADA MOUNTAINS, COAHUILA (often Sierra Mojada or "Mojada" only)

- s.n. *Ptelea* [scrip. Munz], 19 Apr, POM 86898, POM 86959
s.n. *Polygala longa* Blake [det. Wendt], 20 Apr, POM 86385 (?dupl of POM 86381, Jones 97)
s.n. *Giliastrum purpusii* [scrips. Jones exc. name], 20 Apr, POM 74988; see also no. 348, POM 74721
s.n. *Senna lindheimeriana*, 19 Apr, POM 28407
s.n. *Atriplex greggii*, ?19 Apr, POM 103087
s.n. *Croton*, 20 Apr, POM 87330
s.n. "*Calliandra*," 20 Apr, POM 28220
s.n. *Pellea wrightiana*, 19 Apr, POM 120803
s.n. *Notholaena aschenborniana*, 19 Apr, POM 120714
s.n. *Notholaena pringlei*?, 19 Apr, POM 120456
42. *Aristolochia*
52. *Aristolochia wrightii* [det. Pfeifer], 19 Apr, POM 15941; "Flowers almost black. Woody at base. Along dry stream beds"
52. *Aristolochia wrightii*. [scrips. Jones; no descriptive note], 19 Apr, POM 117675
97. *Polygala longa* Blake [det. Wendt], 20 Apr, POM 86381
98. *Polygala robinsonii* [det. Wendt], 19 Apr, POM 86380
99. *Polygala scoparioides* [det. Wendt], 19 Apr, POM 86382; apparent duplicate POM 86509

100. *Polygala scoparioides* [det. Wendt], 19 Apr, POM 86510; better duplicate is POM 86383
101. *Polygala alba* Nutt. [det. Wendt], 19 Apr, [scrips. Jones exc. name] POM 86508; typed label, POM 86386
102. *Polygala watsonii* Chodat [det. Wendt], 20 Apr, POM 86513, POM 86384
107. *Linum rigidum*, 19 Apr, POM 87198
125. *Ceanothus greggii*, 19 Apr, POM 85238
134. *Cercocarpus mojadensis* [isotype], 19 Apr, [long typed description] POM 89493; POM 90138
159. "*Dalea formosa*" ["not sent"], 19 Apr, POM 28918
160. *Dalea*, 19 Apr, POM 29114
161. *Dalea wrightii*, 19 Apr, POM 29109
169. "*Cassia*" [*Sophora secundiflora* det. Rudd], 19 Apr, POM 29586; "Bush about 10 feet high"
194. *Acacia roemeriana*, 19 Apr, POM 28439; POM 26685
195. *Acacia filicina*, 20 Apr, POM 26686
197. *Mimosa* (*Acacia*) *texana*, 19 Apr, POM 28441, POM 26682
198. *Mimosa* sp. [ex Barneby 1985], 19 Apr, POM 28442, POM 26681, POM 28441 p.p.
233. *Calylophus hartwegii*, 20 Apr, POM 38418
284. *Bahia*, 20 Apr, POM 66654
293. *Chrysactinia mexicana*, 19 Apr, POM 30120
298. *Chaptalia* [scrips. Jones], 19 Apr, POM 35632
299. *Acourtia nana* [det. Villaseñor 1990], 19 Apr, POM 38961
310. *Comarophylis polifolia*, 19 April, POM 76733
314. *Asclepias capricornu*, 19 Apr, POM 76022
323. *Heliotropium torreyi*, 19 Apr, POM 262344
328. "*Lithospermum*," 19 Apr, POM 262350
330. *Fraxinus nummularis* [isotype], 19 Apr, POM 76617
331. *Ruellia* [det. T. F. Daniel], 1984, 19 Apr; POM 70325
348. "*Gilia rigidula*" [ex ?Munz] [*Giliastrum* purplish], 19 Apr, POM 74721; "Also at Pastorilla," and in annot. pasted & typed, "Blue *Gilia*. Flowers open at 9 o'clock a.m. and close at about 4 o'clock p.m. Sierra Mojada Mexico April 18 1892"
353. *Loeselia greggii*, 19 Apr, POM 74933
356. *Hibiscus coulteri*, 19 Apr, POM 85054
366. *Buddleia marrubiiifolia* [det. Norman], 19 Apr, POM 69547
368. same *Buddleia*, 19 Apr, POM 70326
383. *Salvia roemeriana*, 19 Apr, POM 70186
405. [*Amaranth*], 20 Apr
411. *Tragia ramosa* [det. Urtecho], 20 Apr, POM 86343
414. *Acalypha hederacea*, 20 Apr, POM 87098
420. *Calylophus hartwegii*, 20 Apr, POM 39929
424. *Jatropha* "*dioica*" [scrips. Jones], 19 Apr, POM 85571
424. same *Jatropha*, 19 Apr., POM 86409
430. *Euphorbia villifera*, 19 Apr, POM 87468
431. *Euphorbia cinerascens*, 19 Apr, POM 86132
443. *Quercus intricata* Trel. [det. C. H. Muller], 20 Apr, [scrips. Jones exc. name] POM 106183; typed label, POM 106274
450. cf. *Hechtia*, 19 Apr; "on rocks in dry places"
476. *Carex* (too young), 20 Apr
482. *Melica laxiflora*, 19 Apr

SIERRA MOJADA MOUNTAINS, COAHUILA (cont.)

483. *Selaginella leptophylla*, 19 Apr
491. *Juniperus monticola*, 19 Apr
518. *Pellaea microphylla*, 19 Apr (18 Apr on one sheet), POM
519. *Notholaena greggii*, 19 Apr
520. *Cheilanthes* (*Notho.*) *palmeri*, 19 Apr, POM
521. *Cheilanthes microphylla*, 19 Apr, POM
531. *Notholaena aschenborniana*, 19 Apr, POM
532. *Cheilanthes villosa*, 19 Apr
542. *Notholaena sinuata*, 19 Apr
601. *Notholaena standleyi*, 19 Apr
604. *Bouteloua*, 19 Apr
609. *Carlowrightia*, 19 Apr
622. *Lesquerella purpurea*, 19 Apr, POM 95989
623. *Greggia*, 21 Apr, POM 95929
624. *Sisymbrium vaseyi*?, 20 Apr, POM 94639
632. *Nama undulatum*, 20 Apr, POM 73759
633. "*Oxybaphus linearifolius*," 20 Apr, POM 102492
635. *Salvia greggii* [det. Epling], 20 Apr, POM 70203
637. *Aristida purpurea*, 20 Apr
638. *Cheilanthes eatonii*, 20 Apr

TAPALPA, JALISCO

- s.n. *Crataegus*, 27 May, POM 91729
s.n. *Pinus*, 27 May, POM 120050
s.n. *Pinus*, 10 June, POM 120648
s.n. *Pellaea*, 10 June, POM 120798
77. *Rhamnus mucronata*
103. *Lupinus reflexus* [det. C. P. Smith], 27 May, POM 24586
?121. ?Verbenaceae [opp. lvs.] "*Tournefortia*" [label illegible], POM 71325
121. "*Viburnum*," 10 June, POM 86247
133. *Ximenia parviflora*, 31 May, POM 89274; all typed: "8000 ft among pines." "A low barberry like shrub with all the lower branches prostrate, and very slender"
191. *Mimosa adenanthroides* [det. Barneby], 10 June, [typed] POM 28626; [scrips. Jones] POM 29017
191. duplicate *Mimosa polyancistra*, 10 June
203. *Lupinus ehrenbergii*, 27 May
308. *Arbutus tessellata*, 11 June, POM 77220; [scrips. Jones] POM 77248
318. *Asclepias constricta*, 10 June
320. *Asclepias constricta*, 10 June, POM 76060; [scrips. Munz] POM 76061; [scrips. Jones] POM 75824
381. *Prunella vulgaris* ["Not sent."], 10 June, POM 70092
422. *Euphorbia radians*, 27 May, POM 85513; US
469. *Hypoxis fibrata*, 10 June
470. *Commelina scabra*, 10 June, POM
761. *Polygala*, 10 June, POM 86390
762. "*Polygala* (*Krameria* ?), 10 June, POM 86989
767. *Anemia*, 10 June

TONILA, COLIMA

- s.n. *Cisampelos*, 8 July, POM 100405
 s.n. "*Cassia*" (*Aeschynomene*), 11 July, POM 29489
 s.n. *Polypodium thysanolepis*, 8 July, POM 120083
 220. *Guettarda elliptica*, 8 July, MSC
 281. *Calea palmeri* [scrips. Jones, exc. name], 1 July, POM 40305
 418. *Acalypha* [scrips. Jones, exc. name], 8 July, POM 86826
 418. ?same *Acalypha* [typed label; "Shrub"], 8 July, POM 86899
 500. *Adiantum patens*, 8 July, NY, POM
 506. *Polypodium thysanolepis*, 8 July, POM
 509a. *Polypodium angustum*, 8 July, POM
 510. *Polypodium lineare*, 8 July
 530. *Pellaea aspera*, 8 July
 534. *Cheilanthes kaulfussii*, 8 July
 537. *Anemia hirsuta*, 8 July, US
 539. *Asplenium fragrans*, 8 July
 540. *Bommeria pedata*, 8 July, POM
 640. *Notholaena "incana"*, 8 July

TUXPAN, JALISCO ("Tuzpan")

- s.n. *Bursera*, 15 June, POM 86501
 1. *Clethra* [scrip. Jones], 15 June, POM 77541
 1. *Clethra*, ?same [typed], 15 June, POM 85631
 49. *Cissampelos pareira* [scrips. Jones exc. name], 15 June, POM 100401
 172. *Eriosema grandiflorum*, 15 June, POM 29581
 176. *Diphysa suberosa* [scrip. Jones], 15 June, POM 28995; typed: "Shrub 2–10 feet high like the ordinary Acacias"
 205. *Desmodium plicatum*, 15 June, POM 29182
 415. *Acalypha* [illeg. typed label], 15 June, POM 86789
 415. same *Acalypha* [scrip. Jones], 15 June, POM 86856
 415a. *Acalypha grisea*, 15 June
 593. *Tillandsia recurvata* [det. L. B. Smith], 15 June
 594. *Tillandsia tenuifolia* L. [?det. L. B. Smith], 15 June
 595. *Agave* cf. *pedunculifera*, 15 June
 597. *Aeschynomene petraea*, 15 June, POM 29246

VOLCANO OF COLIMA (Volcan)

- s.n. *Salix* [unknown to Ball, and Argus], 13 July, POM 106706
 s.n. *Solanum tuberosum* var. *boreale*, 13 July, POM 69820
 s.n. *Alchemilla*, 13 July, POM 9011-
 s.n. [*Valeriana clematitis*, cf. #4], 13 July, POM 84592
 s.n. *Ranunculus petiolaris* [det. Benson], 14 July, POM 100539
 s.n. [*Lupinus*] *montanus* [scrips. Jones], 13 July, [fruit]POM 24591
 s.n. [*Lupinus*] *montanus* [scrips. Jones], 13 July, [flowers]POM 24589
 s.n. *Calliandra*, 14 July, POM 28243
 s.n. *Cerastium*, 13 July, POM 101591
 s.n. *Polypodium madreense*, 14 July, POM 120086
 4. *Valeriana clematitis* [det. F. Meyer] ["middle elevations"], 13 July, POM 84592

VOLCANO OF COLIMA (Volcan) (cont.)

10. *Struthanthus condensatus*, 14 July, [typed: "middle elevations"] POM 83676; [scrips. Jones] POM 117676
88. *Draba jorullensis* ["alpine"]
88. *Draba jorullensis*, 13 July, POM 94315
92. *Arenaria oresbia* ["alpine"], 13 July, POM 101531, POM 117060
93. *Arenaria bryoides* ["alpine"], 13 July, POM 101541, POM 117063
94. "*Drymaria*" (*Arenaria*), 13 July, POM 117079
95. *Arenaria* ?*saxosa* ["alpine"], 13 July
95. *Arenaria*, 13 July, POM 117061
96. "*Drymaria*" (*Arenaria*), 13 July, POM 117080
96. *Stellaria ovata*, 13 July
114. *Oxalis* [scrips. Jones], 13 July, POM 85806
114. "*Oxalis drummondii*?", 13 July, POM 86767
122. *Rhus schmedelioides*, 13 July
122. *Rhus*, 13 July, POM 86045
122. *Serjania* ? [scrips. Jones], 13 July, POM 86057
126. *Ceanothus coeruleus*, 13 July, POM 85241
137. *Alchemilla vulcanica*, 14 July
140. *Ribes ciliatum* [all typed], 3 July, POM 92269
156. *Trifolium amabile*, 14 July, POM 27941
- 156a. *Trifolium amabile*, 14 July
204. *Lupinus reflexus* [type, s.n., Jones scrips.], 13 July POM 24587, POM 24975, POM 24588
216. *Desmodium* sp. [too small to determine], 14 July, (2 species) POM 29181
223. *Symphoricarpos microphyllus*, 13 July, [scrips. Jones] POM 67494; [typed] POM 67587
224. *Fuchsia colimae* ["type"], 13 July, POM 83714
225. *Fuchsia microphylla*, 13 July, POM 83707
232. *Raimannia colimae* Rose ["isotype"], 14 July, POM 38417
236. *Eryngium alternatum* [det. Mathias & Constance 1977], 13 July, POM 82995; "10,000 feet alt. 4–8 feet high"
318. *Asclepias pringlei*, 13 July, POM 76064
318. *Asclepias constricta*, 13 July
324. *Onosmodium*, 14 July, POM 71326
325. *Lithospermum* ? [scrips. Jones], 13 July, POM 71467
325. same *Lithospermum* [typed label], 13 July, POM 262353
326. *Macromeria* ("*Onosmodium*"), 13 July, POM 72251
347. *Cuscuta* on *Lupinus*, 13 July, POM 71171
388. *Castilleja glandulosa*, 13 July
396. *Penstemon kunthii*, 13 July
- 422b. *Chamaesyce hirta*, 13 July, POM 86242
426. *Euphorbia campestris* [scrips. Jones], 13 July, POM 85605
426. *Euphorbia campestris* [typed label], 13 July, POM 85645
427. *Euphorbia campestris*, 13 July, POM 85646
439. *Alnus jorullensis*, 13 July
447. *Yucca schottii*, 14 July
448. "*Agave*," 13 July, POM; US (1 Jun)

VOLCANO OF COLIMA (Volcan) (cont.)

- 449. *Agave colimana*, 13 July, POM; US (*A. pedunculifera*)
- 450. *Dasyllirion*, 14 July
- 451. *Yucca*, 14 July, POM 109485
- 456. "*Liliaceae*," 13 July
- 461. *Epidendrum ciliare*, 13 July, POM; US
- 462. *Encyclia pterocarpum*, 13 July, POM; US
- 466. *Pitcairnia*, 13 July
- 468b. *Smilax*, 14 July
- 478. *Muhlenbergia quadridentata*, 14 July
- 478a. *Calamagrostis*, 13 July
- 479. *Piptochaetium virescens*, 14 July
- 487. *Arceuthobium vaginatum*
- 490. *Abies*, 13 July
- 505. *Aspidium trifoliatum*, 13 July
- 507. *Polypodium* (entire leaf), 13 July
- 522. *Cheilanthes angustifolia*, 13 July
- 524. *Asplenium monanthum*, 13 July
- 526. *Asplenium castaneum*, 13 July
- 535. *Plecosorus speciosissimus* 13 July
- 536. *Cheilanthes*, 13 July
- 595. *Agave pedunculifera*, 13 July, POM
- 683. *Pteridium aquilinum*, 13 July
- 685. *Cystopteris fragilis*, 14 July
- 689. *Triumfetta brevipes*, 14 July
- 691. *Euphorbia* cf. *francoana*, 13 July, POM 86464
- 699. *Oenothera kunthiana* [det. P. Raven], 13 July, POM 39328
- 700. *Geranium*, 13 July, POM 88925

ZACATECAS, ZACATECAS

- s.n. *Astragalus diphacus* var. *peonis* ["type" ex Jones], 16 May, POM 45369
- s.n. *Oxalis albicans*, 23 June, POM 86787
- s.n. *Astragalus humboldtianus*, 4 May, POM 45893
- s.n. "*Arenaria*," 23 June, POM 101141
- s.n. "*Polygala*" (?*Krameria*), 23 June, POM 86389
- s.n. *Dalea argyrea*, 23 Apr, POM 28926
- 89. *Reseda luteola*, 23 June [sic], POM 85028
- 91. *Drymaria*, 23 June [sic], POM 117066
- 123. *Adolphia infesta*, 23 June, MSC; POM 85242; same data and typed: "Low and densely branched shrub"; possibly POM 85401 is the same, but label is illegible.
- 188. *Calliandra* [very small], 23 Apr, POM 28221
- 251. *Opuntia*, no date, POM 83215
- 313. *Asclepias linaria* [scrips. Jones], 23 June, POM 75821
- 421. *Euphorbia radians*, 23 Apr, POM 85476
- 480. *Muhlenbergia tenuifolia*, 23 Apr, POM
- 579. *Erodium cicutarium*, 23 Apr, POM 88766
- 585. *Opuntia* [with long typed description], 16 May, POM 83284
- 623. *Lemna*, 23 June